

MOTOR AGE

ROAD GLORY FOR MANY AT PHILADELPHIA



Chadwick Beats Lozier 6 Seconds for First Place in Park Race—Class Honors Fall to National, Pullman and Abbott



LEN ZENGEL, HIS CHADWICK CAR AND THE PHILADELPHIA TROPHY

PHILADELPHIA, Pa., Oct. 8—A star which had been temporarily in eclipse throughout the summer shot from obscurity today when Len Zengel won the Fairmount park road race, driving a Chadwick six, by a margin of less than 6 seconds, from Ralph Mulford in a Lozier, holder of the national stock chassis road championship, which he won at Elgin in August. No other road race ever run has seen first and second separated by so scant a margin, and never before, in this country at least, have the spectators been held in doubt so long as to the winner as they were today; not even at Savannah when Wagner and Hemery put up their memorable finish, or at the Vanderbilt, where Grant and Dawson seesawed for victory in the final lap. The race also was another victory for the six-cylinder type.

It was a gloriously run and won race, Zengel covering the 202.5 miles in 209:07.88, while the Warner timing instrument gave Mulford 209:13.38. Both Zengel and Mulford, as well as De Hymel in the Stoddard, who finished third in 217:42.85, beat the previous record of

218:13.8, made last year by Robertson in the Simplex. Another record to go was the circuit mark, which was reduced from 7:41, made last year by Zengel, to 7:36 today by Harroun in the Marmon in the twelfth lap. In all nine cars completed the twenty-five laps of the race, while four others were running when the event was called off. Following the Chadwick, Lozier and the De Hymel Stoddard, were Aitken in the National, Jaegersberger in the Mer-

cedes, Cobe in the Jackson, Knight in the Westcott, Gellard in the Pullman and Davis in the Apperson. Padula in the No. 10 Abbott-Detroit was in his twenty-third lap, Frey in the Mercer in his twenty-fourth, Harroun in the Marmon in his twenty-third, and Yeager in the Otto in his twenty-second when the flag fell. This, therefore, left nineteen of the thirty-two original starters eliminated for one cause or another during the progress of the race.

The Fairmount park race this year differed from others in that it was subdivided into classes, with a \$1,000 cash prize for the winner of each, while all the cars were competing for a purse of \$2,500 and the cup given by the city of Philadelphia, which plunder went to the car making the fastest time, regardless of class, which was the Chadwick driven by Zengel. Besides this there were five classes in

CLASS WINNERS

750-601	Chadwick
600-450	Lozier
301-450	National
231-300	Pullman
161-230	Abbott-Detroit



PADULA IN ABBOTT-DETROIT THAT WON THE 161-230 CLASS

which the Chadwick, Lozier, National, Pullman and Abbott-Detroit were the winners. The division results were as follows:

Division 6-C, 601-750 cubic inches—Won by Len Zengel, Chadwick; time, 209:07.88.

Division 5-C, 451-600 cubic inches—Won by Ralph Mulford, Lozier; time, 209:13.38.

Division 4-C, 301-450 cubic inches—Won by John Aitken, National; time, 222:20.75.

Division 3-C, 231-300 cubic inches—Won by Ernest Gellard, Pullman; time, 237:04.

Division 2-C, 161-230 cubic inches—Won by V. Padula, Abbott-Detroit; car was in twenty-third lap when race was stopped.

In some respects the finish of today's grand race somewhat resembled the Vanderbilt, in that tires played a most important part on the final lap. Here, however, both the contenders, instead of one, were up against it on account of tire trouble at the crucial moment, and the race went to the driver who could make the quickest change. When Zengel and Mulford started on their last lap Mulford had the advantage of his rival by 9 seconds, and it seemed a foregone conclusion that he would add to his Elgin laurels. However, it was not to be, for near the water works on the river drive Mulford had to stop and change a left rear. Zengel played in the same kind of luck, for he also had to make a tire change; but evidently he and his mechanic worked faster than did the Lozier pair, for he got going again, picked up his 9 seconds and 6 more, so that he passed across the tape a winner. Mulford was the first of the two to finish, and it was the opinion of the majority that he was the victor. Not until the timers announced the final figures, however, did Zengel get his meed of glory. Zengel had done his last lap in 9:38.88 and Mulford in 9:50.30—slow indeed compared with their earlier pace.

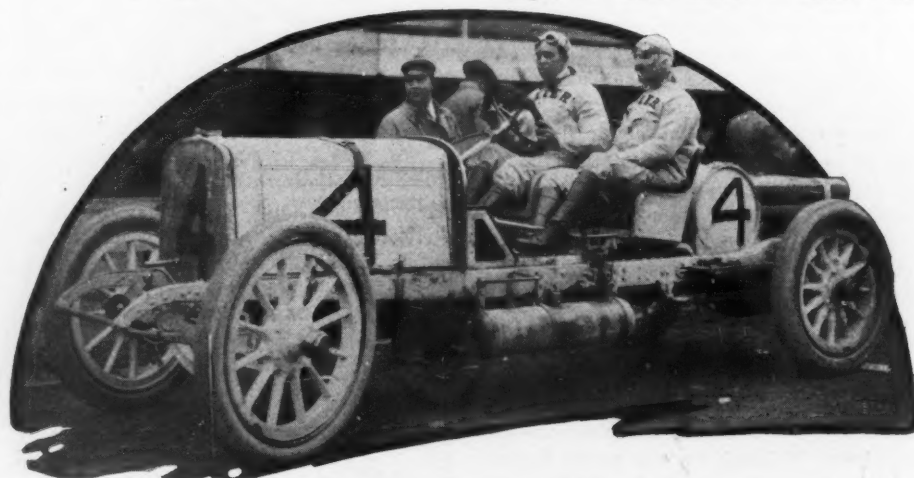
There was a difference in the starting time of 80 seconds in favor of the Lozier,



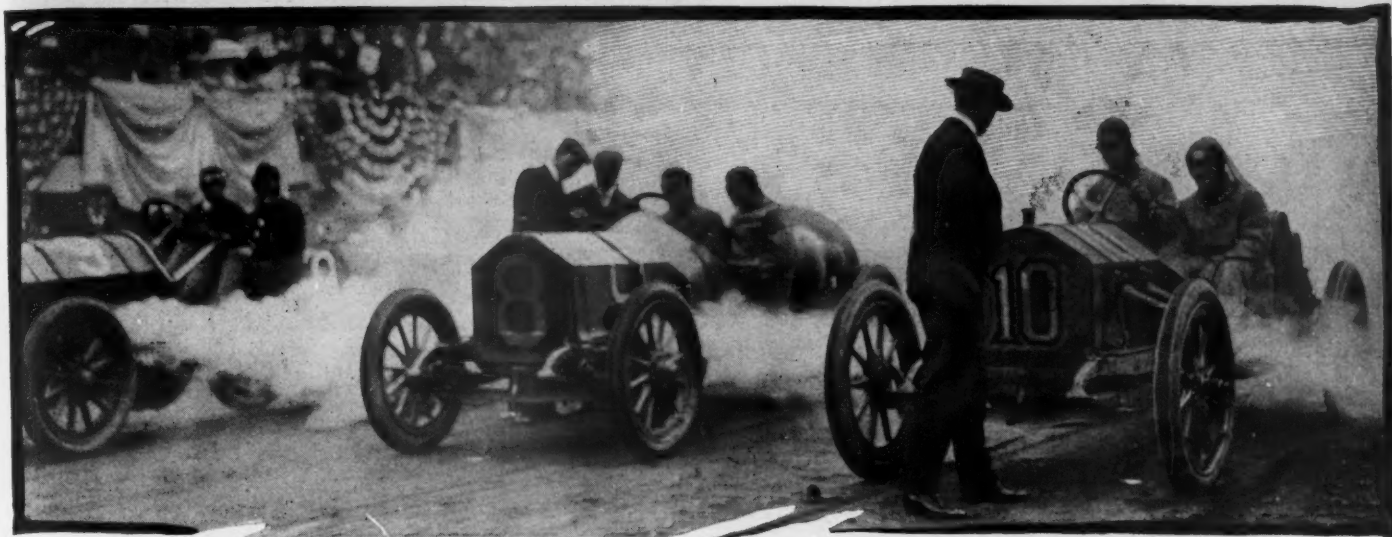
MERCEDES A FINISHER

and this, with the 9 seconds it led in actual time, put it 89 seconds ahead of the Chadwick at the start of the last lap. When the Chadwick came whistling down to the stand a signal from the pits informed Zengel to beat it, and the big car roared like a living thing as it set sail for the white flyer. Less than a minute after it had disappeared from view around the first turn a telephonic message conveyed the news that the Chadwick was suffering from tire trouble. It was learned that the car had thrown two shoes passing the turn. By a marvelously quick change the tires were replaced and the car was once more on its way.

It seemed ages before the white hood of the Lozier appeared at the head of the stretch, tire trouble having been experienced; but when it did it came with a rush that seemed able to carry it to victory. In fact, after the report of the tire trouble suffered by the rival car, the appearance of the Lozier, even after such a slow round, seemed to warrant its reception as the winner. Then followed another agonizing wait. Premature cheering was indulged in after almost a minute had



RALPH MULFORD IN LOZIER, BEATEN BY 6 SECONDS FOR FIRST



THE TWO PULLMANS, NO. 8 DRIVEN BY HARDESTY AND NO. 11 BY GELLARD

passed, and then came the cry, "Here comes Zengel."

Into the broad straightaway swung the long red-hooded car. The pilot knew it was a matter of seconds, and he drove as never before. So fast came the giant that the eager crowd drew away involuntarily as the car shot past. Only a few realized that there was a winning chance, but everybody understood that Zengel was making a most terrific and spectacular effort. The magpie banner waved as he sped on, and the electric device showed that he had beaten the total elapsed time of the Lozier by about 6 seconds.

It was a Philadelphia victory gamely won, for the car is made not far from the Quaker city and the driver is a native son. The winner is entitled to every credit, but the showing of the Lozier was quite as good when it is remembered that the winner had the advantage of 161 cubic inches piston displacement. Stoddard-Dayton No. 29, driven by De Hymel, was third, about 8 minutes later, and National No. 3, Aitken, the same car that finished third in the Vanderbilt cup race, was fourth.

Eight out of the nine cars that finished were stock models of American make, emphasizing the lesson taught in the running



BERGDOLL, BENZ, EARLY FACTOR



JOHNNY AITKEN, NATIONAL, FOURTH AND A CLASS WINNER

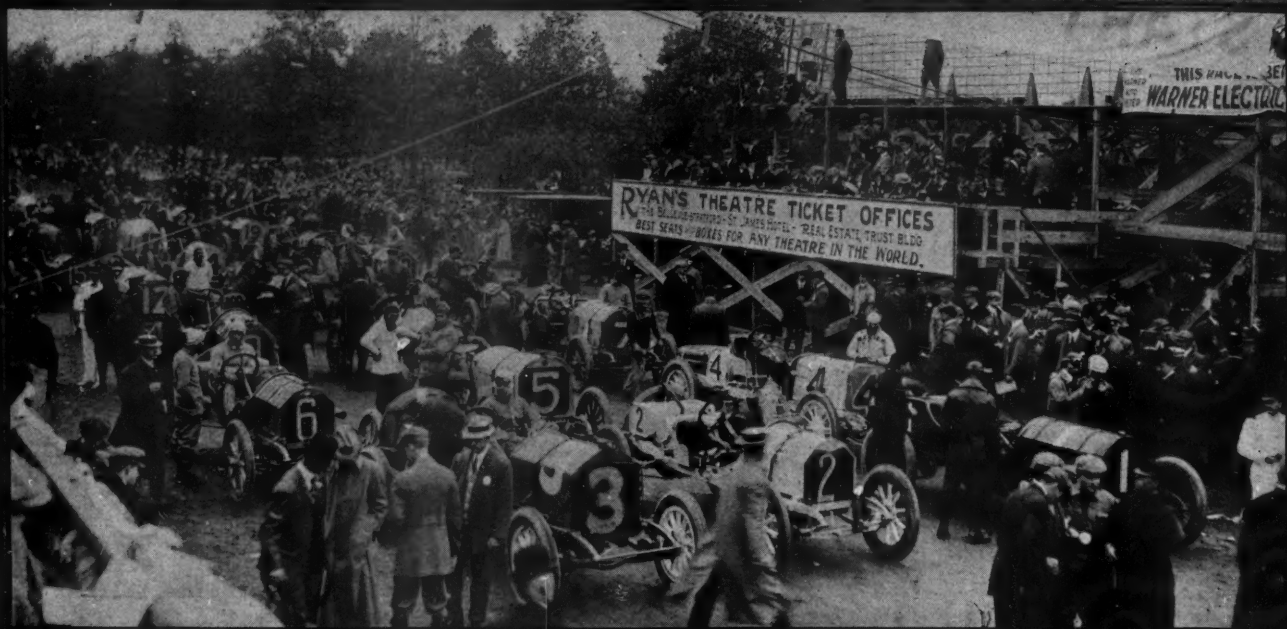
of the Vanderbilt cup. The foreign racing machines experienced bad luck or something else, for they failed to stand up.

The race was a beautiful contest. It was managed and administered with skill and fairness. It was witnessed by fully half a million persons, and not a single spectator was even frightened, so perfect were the policing arrangements. Neither were there any sanguinary accidents to the contestants, although several of the cars met with mishaps and two mechanics suffered broken arms. The course is comparatively slow on account of the numerous hazards along the 8-mile route. The Dip of Death, a plunge under a viaduct, complicated with an S turn; the swing into Neal drive, and the turns at each end of the Concourse forced every careful driver to shut off in making them. That they drove with confidence that the course would prove clear, is apparent from the fact that the record for the race was broken by the first three cars that finished.

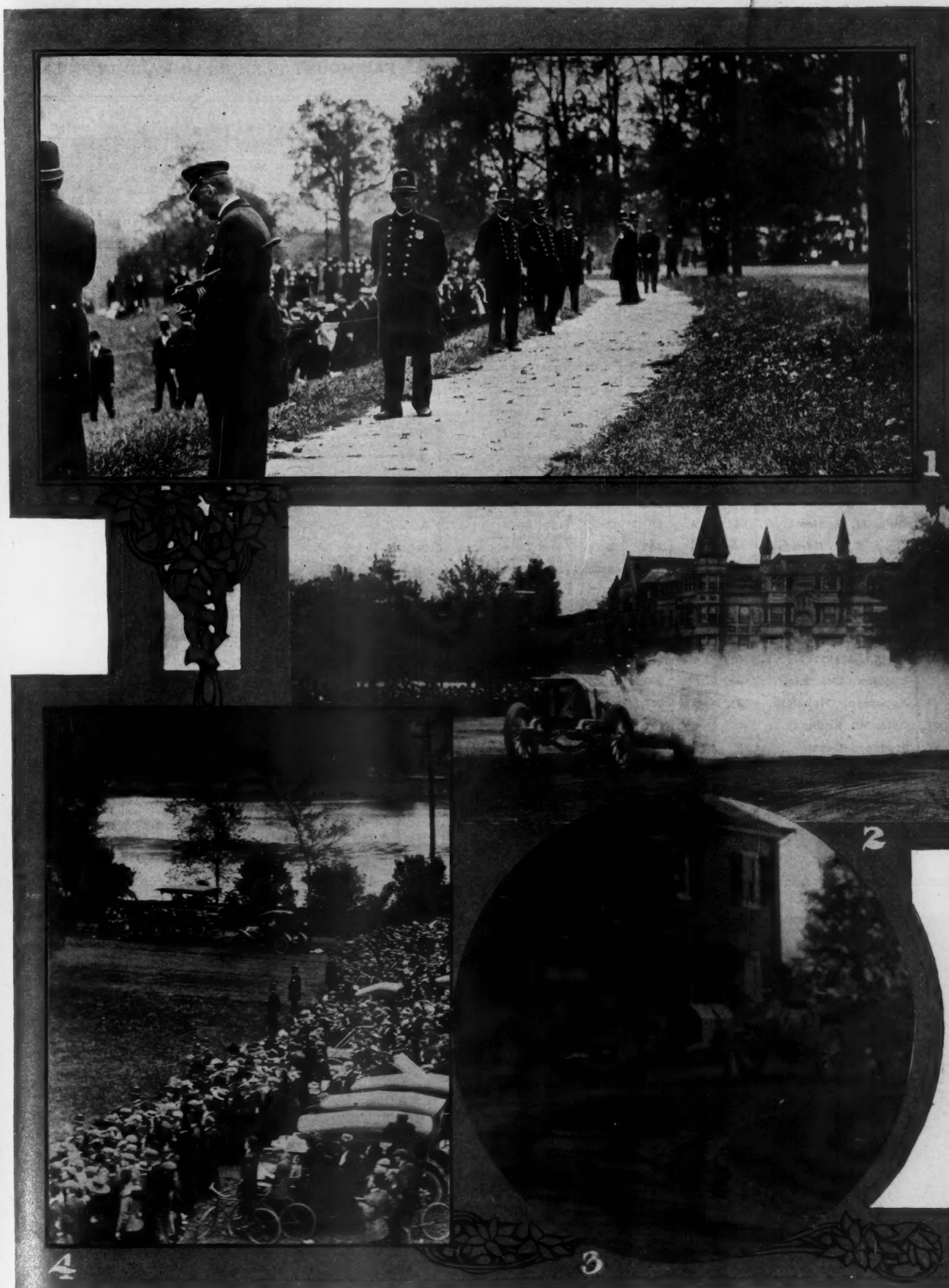
The Chadwick was the only contestant in its class to finish the course, all the others meeting mishaps. The Lozier won in its class, division 5-C, but three others finished in that division. National No. 3, Aitken, won the division 4-C honors, but two others completed the full route. Pullman No. 10, driven by Gellard, was first in division 3-C. The Abbott-Detroit No. 21, driven by Padula, was the winner in division 2-C, but did not have to make the full distance, as the car was the only one running in that division when the race was declared finished.

The story of the race by laps is rather complicated because of the fact that there were so many factors in the race.

Starter G. Hilton Gantert made as perfect a job of getting the thirty-two cars away from the starting line as has ever been seen on a race course. No. 1 Apperson was first away and the Otto last, 5:10 after Hanshue's. Each car was given 10 seconds headway. The fairness, exactness and perfection of the start was commented upon



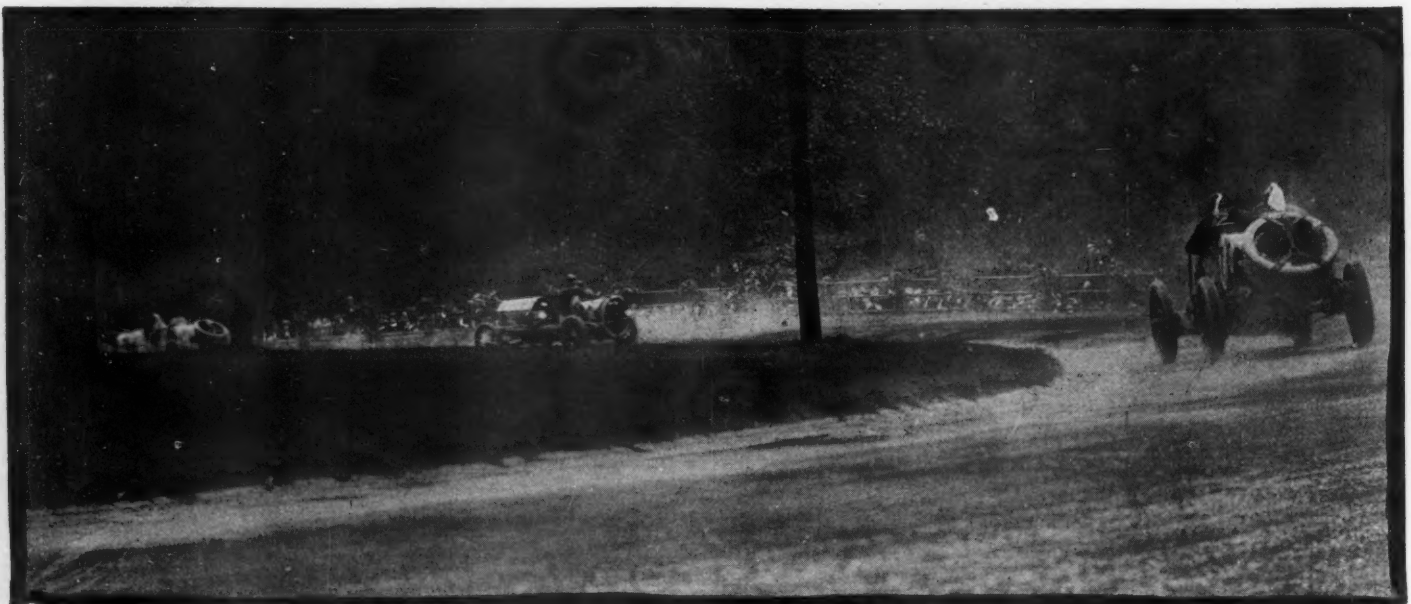
1—THIRTY-TWO CARS LINED UP TO START AT FAIRMOUNT PARK RACE; 2—DE HYMEL IN STODDARD-DAYTON FINISHED THIRD IN THE RACE; 3—THE OTTO CAR AND BERGDOLL'S BENZ CLOSE TOGETHER ON A TURN; 4—THE MAYOR'S BOX IN THE GRAND STAND WAS A CONSPICUOUS ONE



1—THE COURSE IS SEEN AT THE RIGHT, THEN COME THE POLICE, THEN THE ROPE AND LASTLY THE CROWD; 2—ZENDEL AT TOP SPEED; 3—NO. 2 ABBOTT-DETROIT SKIDS—ARROW INDICATES ROAD LEADING TO TURN; 4—THE CONTROL WAS PERFECT AT EVERY POINT

TABULATED RESULTS OF THE THIRD ANNUAL FAIRMOUNT PARK ROAD RACE IN PHILADELPHIA,

No.	Car and Driver.	Bore.	St'ke.	C.Cap.	Div.		1	2	3	4	5	6	7	8	9
12	Chadwick six..... Len Zengel	5	6	471.2	6-C	Total time.....	8:43	17:07	25:45	34:07	42:20	50:46	58:49	67:15	77:00
4	Lozier, R. Mulford....	5 3/8	6	544.6	5-C	Lap time.....		8:24	8:38	8:22	8:13	8:26	8:03	8:26	9:45
						Total time.....	8:32	16:53	25:17	33:40	41:58	50:22	58:39	66:54	75:07
29	Stoddard-Dayton De Hymel	5	5 1/2	431.9	5-C	Lap time.....		8:21	8:24	8:23	8:18	8:24	8:17	8:15	8:13
3	National, Aitken.....	5	5 1/8	447	4-C	Total time.....	8:25	17:07	25:32	34:17	44:39	51:14	59:36	68:04	76:26
						Lap time.....		8:42	8:25	8:45	11:22	8:22	8:22	8:28	8:22
						Total time.....	9:01	17:46	26:26	35:07	43:54	52:47	61:33	70:16	79:10
						Lap time.....		8:45	8:20	8:41	8:47	8:53	8:46	8:43	8:54
20	Mercedes	5 1/2	6	570.2	5-C	Total time.....	8:54	17:58	26:43	35:35	44:25	53:36	62:22	71:09	79:50
	Jagersberger					Lap time.....		9:04	8:45	8:52	8:50	9:11	8:46	8:47	8:41
14	Jackson, Cobe.....	4 7/8	4 3/4	354.6	4-C	Total time.....	9:06	17:58	26:58	36:22	45:31	55:04	64:10	73:30	82:36
						Lap time.....		8:52	9:00	9:24	9:09	9:33	9:06	9:20	9:06
23	Westcott, Knight....			354	4-C	Total time.....	9:11	18:37	27:27	36:50	46:01	55:07	64:09	73:12	82:14
						Lap time.....		9:26	8:50	9:23	9:17	9:06	9:02	9:03	9:02
10	Puliman, Gellard....	4 1/32	5	259.2	3-C	Total time.....	9:43	19:12	28:38	37:59	47:19	56:47	66:00	75:05	84:03
						Lap time.....		9:29	9:26	9:21	9:20	9:28	10:13	9:05	8:58
9	Apperson, Davis....	5 3/4	5 3/4	597.2	5-C	Total time.....	9:44	19:14	28:31	37:54	47:11	56:30	65:39	74:07	84:05
						Lap time.....		9:17	9:17	9:23	9:17	9:19	9:09	8:28	9:58
15	Mercer, Frey.....	4 3/8	5	300.7	3-C	Total time.....	10:12	20:57	30:39	41:24	51:30	61:34	71:41	81:41	91:38
						Lap time.....		10:45	9:42	10:45	10:06	10:04	10:07	10:00	9:57
11	Marmon, Harroun....	4 1/2	6 1/2	413.5	4-C	Total time.....	12:05	21:20	29:55	40:02	48:22	57:15	66:04	74:50	83:32
						Lap time.....		9:15	8:35	10:07	8:20	8:53	8:49	8:46	8:42
32	Otto, Yeager	4 1/8	4 3/4	253.9	3-C	Total time.....	12:57	23:05	33:08	43:05	53:00	67:47	77:52	87:44	97:41
						Lap time.....		10:08	10:03	9:57	9:55	14:47	10:05	9:52	9:57
21	Abbott-Detroit	4	4 1/2	226.2	2-C	Total time.....	11:28	22:23	33:10	44:00	54:43	65:25	76:07	86:41	97:18
	Padula					Lap time.....		10:55	10:47	10:50	10:43	10:42	10:42	10:34	10:37
2	Abbott-Detroit	4	4 1/2	226.2	2-C	Total time.....	10:43	19:53	29:46	39:39	49:33	59:32	69:29	79:30	89:24
	Mortimer Roberts					Lap time.....		9:10	9:53	9:53	9:54	9:59	9:57	10:01	9:54
24	Ford, Kulick.....				2-C	Total time.....	9:47	19:54	29:06	39:14	55:21	64:46	74:16	83:41	115:22
						Lap time.....		10:07	9:12	10:08	16:07	9:25	9:30	9:25	31:41
17	Benz, Haupt.....			444	4-C	Total time.....	20:02	28:25	37:22	46:00	54:40	63:14	71:51	80:28	89:12
						Lap time.....		8:23	8:57	8:38	8:40	8:34	8:37	8:37	8:44
16	National, Wilcox	5	5 1/8	447	4-C	Total time.....	8:54	17:49	26:42	37:49	47:08	60:51	72:19	81:01	89:38
						Lap time.....		8:55	8:53	11:07	9:19	13:43	11:28	8:42	8:37
18	Cole, H. Endicott....	4	4	201.1	2-C	Total time.....	9:52	20:07	29:24	40:01	50:03	60:02	70:05	80:03	89:52
						Lap time.....		10:15	9:17	10:37	10:02	9:59	10:03	9:58	9:49
5	Benz, E. R. Bergdoll..			731	6-C	Total time.....	8:50	17:07	25:23	33:39	41:39	49:41	57:48	66:03	74:12
						Lap time.....		8:17	8:16	8:16	8:00	8:02	8:07	8:15	8:09
28	Marmon, Dawson....	4 1/2	5	318.1	3-C	Total time.....	8:43	17:43	26:15	35:04	43:58	52:45	61:29	70:08	78:46
						Lap time.....		9:00	8:32	8:49	8:54	8:47	8:44	8:39	8:38
26	Benz, Hearne.....			448	4-C	Total time.....	8:58	33:53	43:36	53:03	64:34	75:58	85:38	95:23	109:57
						Lap time.....		24:55	9:43	9:27	11:31	11:24	9:40	9:45	14:34
25	Chadwick, Mitchell...	5	6	471.2	6-C	Total time.....	8:10	18:48	25:07	33:18	41:30	Ran into bank			
						Lap time.....		10:38		8:11	8:12				
13	Simplex, Mullen	5 3/4	5 3/4	597.2	6-C	Total time.....	9:49	19:26	28:11	Cracked cylinder					
						Lap time.....		9:37	8:45						
31	Corbin, Matson.....	4 1/2	4 1/4	270.4	3-C	Total time.....	9:25	19:17	30:27	Magnet trouble					
						Lap time.....		9:52	11:10						
22	Simplex, Beardsley...	5 3/4	5 3/4	597.2	6-C	Total time.....	8:45	17:33	Struck bridge abutment						
						Lap time.....		8:48							
1	Apperson, Hanshue..	5 3/4	5 3/4	597.2	5-C	Total time.....	9:31	18:47	Stripped gear						
						Lap time.....		9:16							
27	Cole, W. Endicott....	4	4	201.1	2-C	Total time.....	10:27	20:54	Broke steering pinion						
						Lap time.....		10:27							
7	Stoddard-Dayton Harding	5	5 1/2	431.9	5-C	Total time.....	8:47	23:47	Engine trouble.						
						Lap time.....		25:00							
6	Abbott-Detroit	4	4 1/2	226.2	2-C	Total time.....	11:42	30:20	Ignition trouble						
	Montague Roberts					Lap time.....		18:38							
8	Pullman, Hardesty...	4 1/32	5	259.2	3-C	Total time.....	14:49	Twisted pump shaft							
						Lap time.....									
30	Benz, C. A. Bergdoll.			449	4-C	Total time.....		Lost gasoline cap							
						Lap time.....									
19	Simplex, Betz.....	5 3/4	5 3/4	597.2	6-C	Total time.....		Broke crank shaft							
						Lap time.....									



SPECTACULAR SWEET BRIAR TURN IN FAIRMOUNT PARK ROAD RACE WHERE GREAT CAUTION WAS DISPLAYED

PHIA, WHICH WAS WON BY ZENGEL IN A CHADWICK SIX WITH RALPH MULFORD IN LOZIER SECOND

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	M.P.H.
77:00	85:17	93:29	101:42	109:55	118:10	126:18	134:26	142:23	150:37	158:46	166:50	174:57	183:09	191:22	199:31	209:07:88	58.10
9:45	8:17	8:12	8:13	8:13	8:15	8:08	8:08	7:57	8:14	8:09	8:04	8:07	8:12	8:13	8:09	9:36.88	
75:07	83:20	91:33	99:45	107:57	116:09	124:24	132:39	140:51	149:08	157:26	166:53	175:08	183:06	191:23	199:22	209:13:30	58.07
8:13	8:13	8:13	8:12	8:12	8:12	8:15	8:15	8:12	8:17	8:18	9:27	8:15	7:58	8:17	7:59	9:50.30	
76:26	84:47	93:10	106:42	114:47	126:09	134:51	143:07	151:53	160:09	168:25	176:41	184:53	193:02	201:12	209:24	217:42:95	55.81
8:22	8:21	8:23	13:32	8:05	11:22	8:42	8:16	8:46	8:16	8:16	8:16	8:12	8:09	8:10	8:12	8:18.95	
79:10	88:23	97:19	106:13	115:02	123:57	132:57	141:47	150:36	159:27	168:22	177:13	186:11	195:16	204:13	213:18	222:20:75	54.64
8:54	8:13	8:56	8:54	8:49	8:55	9:00	8:57	8:49	8:51	8:55	8:51	8:58	9:05	8:57	9:05	9:02.75	
79:50	88:34	97:37	108:22	116:58	125:38	134:17	142:53	151:23	159:51	168:44	180:08	188:55	197:30	206:05	214:41	223:18:74	54.41
8:41	8:44	9:03	10:45	8:36	8:40	8:39	8:36	8:30	8:28	8:53	8:47	8:25	8:35	8:35	8:36	8:37.74	
82:36	91:51	100:50	110:01	119:05	128:12	137:07	146:04	155:04	163:59	172:59	181:56	190:50	199:42	208:37	217:28	226:13:16	53.70
9:06	9:15	8:59	9:11	9:04	9:07	8:55	8:57	11:00	8:55	9:00	8:57	8:54	8:52	8:55	8:51	8:45.16	
82:14	91:12	100:07	109:09	118:06	127:05	136:01	144:55	155:20	164:36	175:14	184:18	193:15	202:14	211:09	220:08	232:44:87	52.20
9:02	84:03	8:58	8:55	9:02	8:57	8:59	8:56	8:54	10:25	8:16	10:38	9:04	8:57	8:59	8:55	12:36.87	
84:03	93:01	102:00	110:53	119:49	129:54	139:06	148:22	157:49	167:27	177:05	186:32	196:10	205:46	216:40	226:59	237:04	51.24
8:58	84:05	8:58	9:59	8:53	8:56	10:05	9:12	9:16	9:27	9:38	9:27	9:38	9:36	10:54	10:19	10:05	
84:05	94:30	103:50	112:58	122:08	131:20	140:36	150:03	161:50	171:10	188:15	197:25	206:39	216:01	225:19	234:29	243:42:05	49.17
9:58	91:38	10:25	9:20	9:08	9:10	9:12	9:16	9:27	11:47	9:20	17:05	9:10	9:14	9:22	9:18	9:10	9:13.05
91:38	101:25	111:00	120:34	130:07	139:39	149:08	161:43	171:18	180:51	190:20	199:56	209:36	219:11	228:49	238:22	Running	
9:57	83:32	9:47	9:35	9:34	9:33	9:32	9:29	12:35	9:35	9:29	9:36	9:40	9:35	9:35	9:38	9:33	
8:42	92:11	101:53	109:31	118:29	150:50	160:30	170:08	179:38	191:15	201:04	210:39	220:25	229:55	239:28	Running	Running	
97:41	8:39	9:42	7:38	8:58	32:21	9:40	9:38	9:30	11:37	9:49	9:35	9:46	9:30	9:33	9:33	9:33	
9:57	111:03	121:06	131:08	141:10	151:13	163:26	173:41	183:42	193:52	205:09	215:10	225:09	235:18	Running	Running	Running	
97:18	13:22	10:03	10:02	10:02	10:03	12:13	10:15	10:01	10:10	11:17	10:01	9:59	10:09	Running	Running	Running	
10:37	107:40	118:18	128:49	139:17	149:53	160:25	172:31	183:05	193:25	204:03	214:27	224:50	237:27	Running	Running	Running	
89:24	10:22	10:38	10:31	10:28	10:36	10:32	12:06	10:34	10:20	10:38	10:24	10:23	12:37	Running	Running	Running	
9:54	99:18	109:22	119:19	129:13	139:13	149:08	159:10	169:04	179:06	189:06	199:05	209:05	219:05	229:05	239:05	249:05	
115:22	9:54	10:04	9:57	9:54	10:00	9:55	10:02	9:54	10:00	10:00	10:00	10:00	10:00	10:00	10:00	10:00	
31:41	124:50	134:27	143:57	153:27	162:55	172:51	184:22	197:05	206:40	216:06	225:46	235:18	245:00	254:42	264:24	274:06	
89:12	9:28	9:37	9:30	9:30	9:28	9:56	11:31	12:43	9:35	9:26	9:40	9:40	9:40	9:40	9:40	9:40	
8:44	97:48	106:23	115:06	123:51	132:33	141:20	150:23	159:02	167:38	176:09	184:51	193:32	202:14	211:09	220:08	229:07	
89:38	8:36	8:35	8:43	8:45	8:42	8:53	9:03	8:79	8:36	8:31	8:31	8:31	8:31	8:31	8:31	8:31	
8:37	98:16	107:01	115:43	126:31	135:06	143:35	152:05	160:44	170:39	180:08	189:06	198:05	207:04	216:03	225:02	234:01	
89:52	8:38	8:45	8:42	10:48	8:35	8:29	8:30	8:39	9:55	10:51	11:47	12:43	13:39	14:35	15:31	16:27	
9:49	99:54	109:43	119:52	130:57	143:19	151:43	162:07	172:58	183:25	193:52	204:19	214:46	225:13	235:40	246:07	256:34	
74:12	10:02	9:49	10:09	11:05	12:22	8:24	10:24	10:51	20:27								
8:09	82:25	90:35	98:40	107:01	115:17	123:32	Broke oil feed										
78:46	8:13	8:00	8:05	8:21	8:16	8:15											
8:38	87:22	96:15	104:59	Broke rear axle housing													
109:57	8:36	8:53	8:44														
14:34	Ignition trouble																



No. 21 ABBOTT-DETROIT, No. 28 MARMON AND No. 15 MERCER RACE FOR A TURN



NO. 14, JACKSON, DRIVEN BY COBE, A FINISHER, AND NO. 13 SIMPLEX

generally. Chadwick, 25, led in elapsed time at the end of the round in the fast time of 8:10. The Lozier was first to make the trip, leading past the stand, but its time was 8:32. Chadwick No. 12 was third, a shade faster than the Marmon, 28, but both were credited with 8:43. National No. 16 led in its class and the Ford No. 24 showed the way for the small cars.

The Lozier assumed the lead in the second round, with No. 29 Stoddard-Dayton, No. 5 Benz and No. 12 Chadwick tied for the placed positions. In the third round No. 25 Chadwick regained the lead and held it for three laps, closely pressed by No. 5 Benz and the Lozier. In the sixth No. 25 Chadwick, which was driven by Mitchell, was eliminated, plunging off the course and striking an embankment.

No. 5 Benz, driven by E. R. Bergdoll, went to the front in the sixth and from there to the end of the fifteenth lap it set a fast pace, running about a mile a minute. At the end of that round it was leading the Lozier by 52 seconds, with No. 12 Chadwick in third place.

No. 3 National was fourth in point of speed and led its class by a wide margin. The Dawson Marmon that had run second in the Vanderbilt had met with a mishap in the thirteenth round and the No. 10 Pullman had established a winning lead in division 3-C. No. 2 Abbott-Detroit was leading No. 18 Cole in the little class. No. 11 Marmon broke the lap record in the twelfth round with 7:38.

In the next round the Benz broke an oil feed and was withdrawn, leaving the Lozier out in front with a comfortable lead over No. 12 Chadwick. From this point to the finish it was a duel between these such as has been rarely witnessed. For four laps the Chadwick gradually reduced the margin of about 2 minutes and in the twentieth lap it finished with an advantage of 3 seconds. It stayed in front for the next lap, but in the following round the Lozier got into the van once more,

with 3 seconds to spare. The Chadwick seemed to have something in reserve, for whenever it reached the lead the driver was signaled to take it easy. Nevertheless, he was forced to make some exceedingly fast rounds at this stage through the beautiful steady speed of the Lozier. Lap 22 found the Lozier in front, but in the next round the Chadwick was ahead by 1 second. The Lozier made the twenty-fourth lap in less than 8 minutes and led its rival by 9 seconds at the tape.

At the beginning of the last lap there still were thirteen cars left in the race and word was given that enough cars would be given a free course to finish as would be necessary to decide upon a winner in each class. As has been said, the Chadwick won the grand prize and its class in record-breaking time, but the race was not called off until No. 2 Abbott-Detroit had finished twenty-two laps and was running perfectly without any opposition.

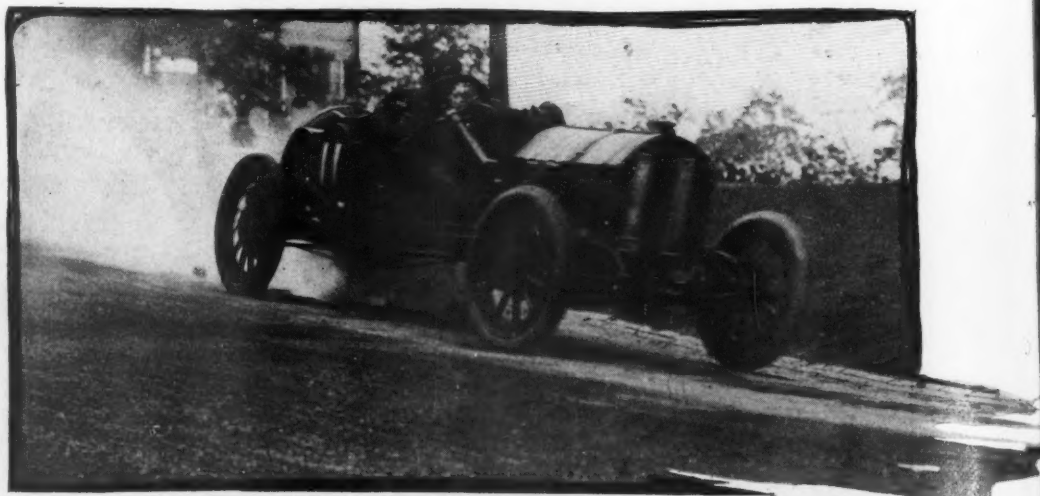
The National, winner in division 4-C, ran steadily and well throughout. No. 23 Westcott completed the full course in this division, as did also the Jackson. The Pullman No. 10 was the only car to finish in division 3-C, but the Mercer and the

Otto were both running perfectly at the end when the race was called off.

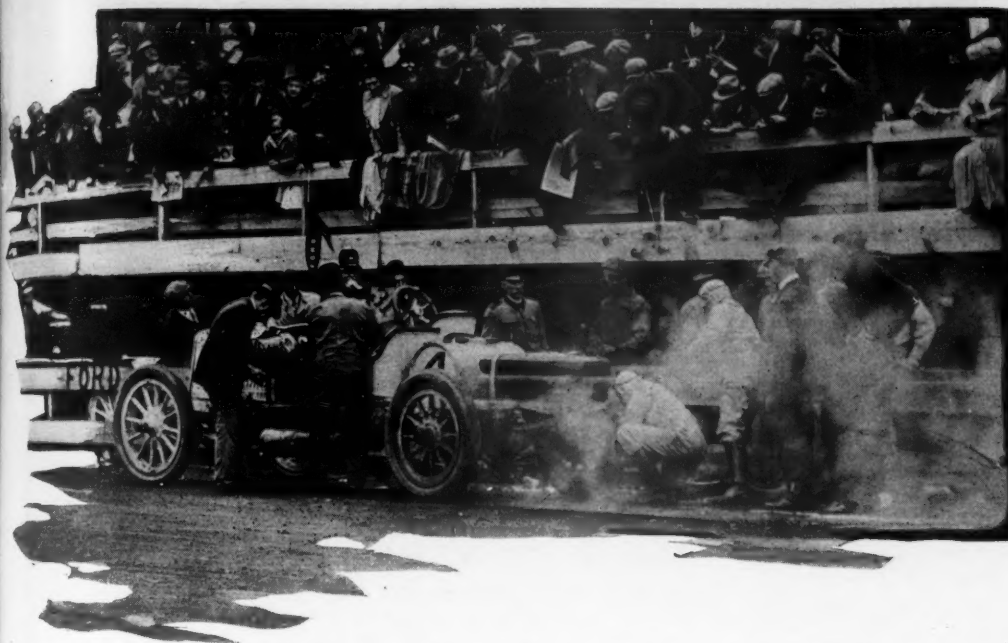
The Abbott-Detroit, winner of the 2-C prize and trophy, had a stormy passage. Both Cole entries succumbed to mechanical troubles before the end, and the Ford was disqualified for using four men to replace a wheel in lap 20. No. 6 Abbott-Detroit had dropped out early with ignition troubles and No. 2 Abbott-Detroit had shed a wheel while far in the lead in lap 20. This left No. 24 Abbott-Detroit a certain winner and when the victors in the larger class had been determined, Padula was given the checkered flag while still three laps from home.

The race was conducted as usual by the Quaker City Motor Club. Harry C. Harbach, secretary, was responsible for the preliminary arrangements, all of which worked out to a mathematical nicety. The timing, scoring, starting, judging and everything connected with the race were well done in an orderly manner. The police arrangements would command admiration anywhere. The technical committee, under the supervision of A. L. McMurtry, was quick and decisive in its actions. In order to show how carefully the committee did its work, it may be cited that the winning Pullman car was given the white flag in one of the later rounds by Mr. McMurtry, when it was noted that a tire carrier was dragging from the rear springs. At the time the car was struggling for the lead in its class and this peremptory action might have caused it to lose. But the committee figured that it is better to be safe than sorry and the Pullman had to stop and adjust the dislodged part and won anyway. R. E. Ross was referee.

From a financial standpoint nothing could have been more successful than the race. Three thousand grand stand seats at \$2 apiece were sold. Seventy-five boxes were disposed of at \$25 each. Five hundred motor car owners parked their machines around the course and paid \$10 for the privilege. The total receipts from these sources amount to \$12,875. Preparations for the races—the cost of the grand stand, the score board and including the



HARROUN, MARMON, WHO MADE THE FASTEST LAP IN RACE



MULFORD IN THE LOZIER MAKING TIRE CHANGE AT THE PITS

expenses for hired help and printing and various sundries that cropped up as the arrangements were being made—cost the Quaker City Motor Club and the other promoters approximately \$4,000. This leaves about \$8,875 to be distributed equally among the four funds to which it is to be donated. The beneficiaries will be the Home of the Merciful Saviour for Crippled Children, St. Mary's Hospital, Mount Sinai Hospital and the Police Pension Fund.

As to the crowd who witnessed the race, estimates vary. The Quaker City Motor Club, basing its estimate on the previous race crowds, and judging from the multitude that witnessed the Vanderbilt races, say that there were upward of 600,000 persons lining the course. There were two solid strings of humanity, each eight miles long. Trees, motor cars, buses, fences, hills and every other point of vantage held its quota.

The Rapid Transit Co. carried many thousands and thousands walked home, unable to get on the cars. West Philadelphians walked home by choice. Thousands came and went in motor cars. Teams of every sort and variety carried hundreds. The police estimate the crowd at more than 600,000, and those who rode over the course just before the race was called verify their guess.

The safeguarding of the course was excellent and owing to the vigilance of the police and Fairmount park officials danger to drivers and spectators alike was reduced to a minimum. Of course minor accidents occurred, but these were unavoidable and were occasioned by mechanical imperfections and too great speed of the cars. Every precaution was taken to safeguard spectators, and when one stops to consider that there were upwards of 600,000 persons present, the fact that so few were in any way injured speaks volumes for the faithfulness of those in-

trusted with this most important feature. Strict rules were rigidly enforced throughout the running of the race to keep the overzealous enthusiast from letting his feelings run away with him and venturing too near the track, endangering his own safety and probably that of others. Three thousand officers were stationed around the course and at every possible viewpoint rope had been stretched the day before.

The day opened inauspiciously for the race. It had rained on Friday and when the lowering clouds were still in evidence this morning apprehension was expressed as to whether the great contest would be held, but as Referee Ross had stated that nothing but rain would prevent it, the crowds started early to get points of vantage. Indeed, Friday's rain put the course in excellent shape, this being especially true of the cinder portion of the track along the West Park drive, and bar-

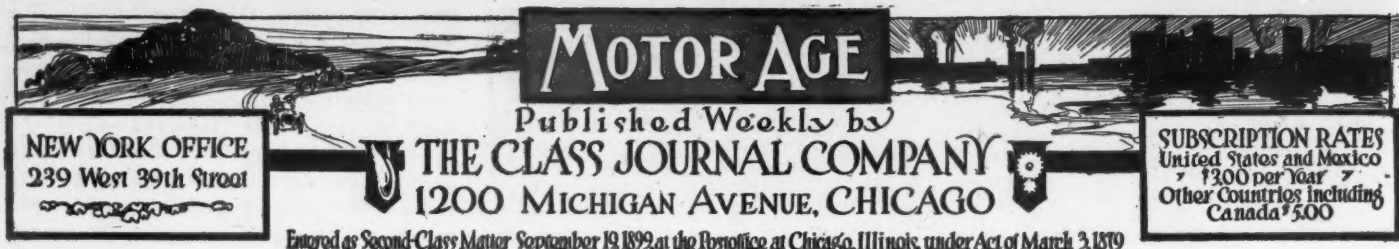
ring a few soft spots at the turns prospects were excellent for a fast race. As in the past, the objective points of the early comers were the spots where the element of danger was concerned and where thrills might be expected. The hills about Sweet Briar were a solid mass of people, and owing to the possibility of serious accidents at this point, the police protection was doubled and the ropes placed at a greater distance from the course.

OLDFIELD SUSPENDED

New York, Oct. 11—By an edict of the contest board of the American Automobile Association, issued tonight, Barney Oldfield stands temporarily suspended and disqualified for his announced intention of racing Jack Johnson, the heavy-weight prize fighter, in a meet at Sheepshead Bay on October 20, for which a sanction has been refused by the national organization. Oldfield and his manager, W. H. Pickens, are cited to show cause why the ruling should not be made permanent. Pickens is brought into the deal by the accusation that he has issued statements "injurious to the well-fare of the sport," and because of this he has been disqualified as manager, promoter, entrant, owner or driver. This action of the board follows upon the heels of the canceling of the driver's license issued to Jack Johnson, which was withdrawn "for failure to comply with the necessary requirements in connection with such registration." In the statement accompanying the disqualification notice sent to Oldfield, the A. A. A. contest board deplored "the entrance into an organized, well-accredited sport of the leading exponent of an unorganized so-called sport which is under the ban in most of the states of the union, and who is, as we believe, without requisite experience in motor track racing and has as yet to demonstrate his competency as a racing driver." Johnson has declared his intention of going to the courts and compel the board to grant him the driver's license.



FRED BETZ, THE PHILADELPHIA AMATEUR, IN HIS SIMPLEX



MOTOR AGE
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Logic of the Low-Priced Car

THE general conception among buyers is that the low-priced car must of necessity be an assembled car; that a manufacturer could not afford to make his own parts for a car selling at under \$1,000. It has been argued that the motor manufacturer can build a motor for such a car and sell it cheaper than the car builder could produce it; it has been argued that it is cheaper to buy steering gears for such a car than to manufacture them; that it is cheaper to buy front axles than to put in a forge plant and forge them; and that it is cheaper to buy a gearset than it is to forge gears, cut them and finish them. So has it been with frames, springs and all other parts of the low-priced machine.

AS a matter of fact all such assembly logic in the low-priced machine is diametrically wrong. If there is any car that should be a home-made car it is the low-priced one. In order to build low-priced machines it is presupposed that the manufacturer is going to build them in quantities, which is the only possible way in which such a car can be produced and yet be worthy of the name car. It is common logic that if you buy a motor ready made, the company that manufactured the motor had to make its profit. If the car builder built the motor that profit could be his and he could use it in order to lower the price or put in better material or better workmanship. If a forge company can make money by selling forgings for axles, gears, steering parts, running board brackets and other parts why cannot the car maker make practically that same amount of money by installing his own forge department, and so by the money saved reduce his price without reducing the grade of material used in the car? Where he builds cars in sufficient quantities he can do so.

IT is a fact that a concern turning out over 10,000 cars a year can turn out a cheaper and a better car the more parts of that car it makes in its own factory. There is money for the cheap-car maker in forging his own crankshafts, camshafts, front axles, steering gear parts and all gear blanks. It takes money to install a forge plant, and it requires expert work to handle such a plant, but once it is installed a profit will result when the car output of the company is large. By a company having its own forge plant the only money made is not simply that saved in reduced cost, but that saved in ready delivery. It is worth thousands to a concern not to have to wait on materials. Where a concern makes its own frames there is no paying express on them or waiting for them at times when delays in deliveries mean loss of sales. The car builder, who is a manufacturer from the ground up, is free from that worry of waiting, writing and wiring for materials, and is also spared that expense of having perhaps ten or more travelers going all over the country in search of a few extra axles at one place, a few more frames at another point, some radiators at a third and some crankshafts at a fourth. The car maker who has his own forge plant, who stamps his own frames, makes his own radiators and, in fact, makes practically all of his car except the magneto and carbureter, is lord of the field and does not fear competition. He makes his own parts and knows what materials enter into them. He is free from the worry as to how different parts will stand up, and he is not compelled to spend money taking down and then reassembling motors or other parts that have been purchased from parts makers, and have been so hurriedly put together that they have to be taken apart and properly assembled. Because of these many angles it

seems most logical that the low-priced car should first, last and always be a home-made product, and if so the maker cannot afford to do anything else than put out the best possible product. This is the cheapest policy. If he puts out a cheap product he is compelled to replace axles or other parts, and where the output is up in the thousands the expense of replacing parts is much greater than that of putting good workmanship into a car at the start.

IT has been argued that jigs are expensive features in car manufacture, and that they only belong to the high-priced machine. It is granted that jigs are expensive, but it must also be acknowledged that they are among the cheapest things in a factory. It is by jigs that cost of manufacture is reduced. Jigs eliminate the human element. A workman picks up a crankcase to put on the milling machine and there is only one way in which it will go into the jig—that is the right way. Once in the jig it is plain sailing. The jig shows where the various holes have to be drilled. There is not any measuring to find the location of this hole, and a lot more measuring to determine where other holes should be drilled. The rule has ceased to be a factor in the modern factory, in fact, today the visitor never sees tools, other than a gauge or micrometer. They are not necessary. It takes too long a time to measure with a rule where a hole should be or to determine its diameter with a compass. All of this is done with the jig. The jig is a cast iron bar against wrong. It makes it possible for a factory superintendent to take an ordinary artisan, who understands the operation of machinery, into his factory and turn out fast work from the first day. Jigs are imperative in a cheap car.

THE necessity of jigs in cheap car construction is imperative in another way. If in any car there should be interchangeability of parts it should be in the machine listing at less than the thousand-dollar mark. Jigs are the only sure means of insuring interchangeability. If all of the holes in a frame are drilled with a jig; if even the holes to take grease cups in any casting are jigged; if rivet holes are jigged, then it is possible for a part made to take a special position in a car to fit any car of that model, whether owned in California or Maine. In a low-priced car the rivet holes for holding the clutch facing to the cone should be jigged so that there is only one way in which any repair can be accomplished, and that the right way. So it is all through the low-priced car, the jig must be paramount, and if it is not the company is going to sooner or later be heels over head in trouble.

THE low-priced car should be a well made car, it should have good materials and it should have good workmanship. Experience has shown that those concerns turning out poorly made low-priced cars have not been able to exist, and some today, who have followed this policy, are spending more in replacing defective parts than it would have cost to have made the part of better material and bestowed workmanship at the start. The low-priced car should be an honest machine, one well designed, with good steels and well put together. The assembled car will not prove the ultimate one in the low-priced field. It will soon be next to impossible for the assembler to compete against the big concern turning out a home-made low-priced machine.

GRAND PRIX RACE AWARDED TO SAVANNAH

NEW YORK, Oct. 11—Special telegram—The second renewal of the American grand prix will take place at Savannah, Ga., November 12, instead of on the Long Island motor parkway next Saturday. This is an unexpected switch on the part of the powers that be since last week, but the big race has been before the Motor Cups Holding Co. and the Automobile Club of America since last Thursday, when W. K. Vanderbilt, Jr., decided that because of the adverse criticisms following the running of the Vanderbilt, the Motor Cups Holding Co. would not stage the race next Saturday.

Hardly had the news of this action been sent out before Savannah became a bidder for the plum. Not only did the Savannah Automobile Club strip for action, but the municipal authorities as well joined in the application for the sanction. Promising military protection and a fine course, the Georgians were given a hearty welcome by the New Yorkers, who endorsed the proposition. The contest committee of the Automobile Club of America yesterday acted favorably upon the application, suggesting November 12 as the date and tonight the board of directors of the A. C. A. ratified the action of the committee. The victory was not achieved by default, for besides Savannah, there was talk of running the race in Fairmount park, Philadelphia, because of the masterly manner in which the Quaker City Motor Club had handled the big contest there last Saturday. The Indianapolis and Atlanta speedways also bid for the event, but they had no chance of getting it, because the deed of gift calls for the race being run on the public highway or on a parkway such as the one on Long Island.

It had not been expected that the Motor Cups Holding Co. would abandon the grand prix after its action of last week, when it received the endorsement of the Nassau county supervisors. However, the criticisms on the Vanderbilt did not abate and the Long Island parkway people could not guarantee better protection than was had in the Vanderbilt, and so last Thursday night Mr. Vanderbilt called together the entrants and laid the matter before them. The Motor Cups Holding Co. asked to be relieved of the responsibility of conducting the race, and the entrants adopted a resolution granting its request. The reason given for this action was the alleged unjust and unwarranted criticism of the Vanderbilt, while it also was explained that the suggestion to protect the course with militia was impossible.

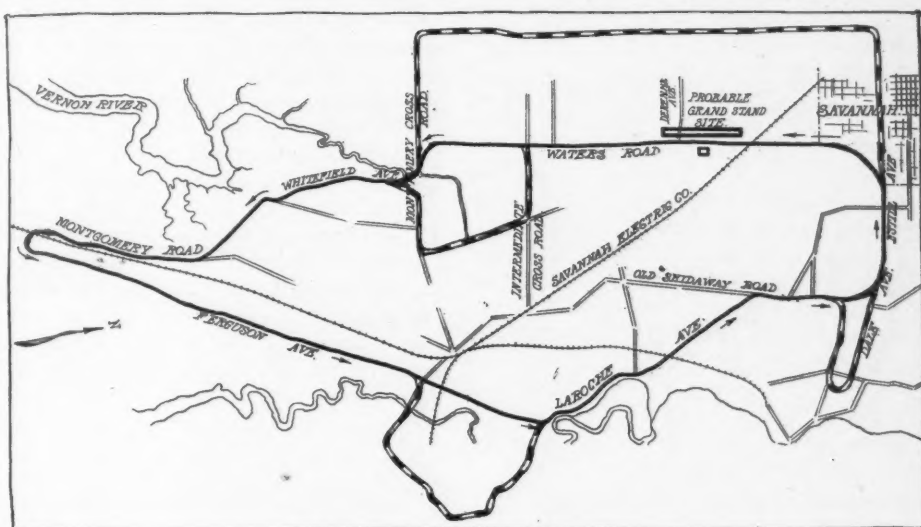
Savannah having landed the plum, reports from the Georgian metropolis state that the new promoters have lost no time in getting ready for the event. Earlier in the year when they had asked for the grand prix they had made their plans for a comparatively new course, and so now they are prepared to take advantage of the

opening. The old circuit was 24 miles around and had nineteen turns, several of which were very dangerous. The new course that is to be used is an 18-mile circuit with only seven turns and every one of them banked. The starting point will be on Waters road, a new highway which was used for the light-car race in 1908, which is from 20 to 25 feet in width. Norwood avenue, a continuation of Ferguson avenue, takes the place of the Isle of Hope, giving a stretch of 8 miles straightaway, while Waters road is to be used in place of the White Bluff highway. Estill avenue and Thunderbolt road have been cut off the circuit. The finest part of the new route is to be found on Norwood avenue,

tary of the Savannah Automobile Club, announced that there will be 2 days of racing. The first day, November 11, will be devoted to two events, one for cars of from 161-230 cubic inches, and the other for cars of from 231-300. The distance of the grand prix itself will be 407 miles, or twenty-two laps. First to enter the 231-300 class event is the Falcar, which has made three nominations, with Pearce, Gel-naw and Hughes as drivers.

RACING AT AMARILLO

Amarillo, Texas, Oct. 11—The racing meeting on the local speedway opened yesterday afternoon, the feature of the card being a 20-mile race, which was won by a



MAP OF NEW ROAD RACE COURSE AT SAVANNAH

which is between 40 and 50 feet wide and which will give the contesting drivers an opportunity to make great speed.

The Savannah Automobile Club is being given the strongest support not only by the city officials, but by the county commissioners, board of trade, the chamber of commerce and the military officials, while the governor looks with favor upon this opportunity to again demonstrate Savannah's ability to handle the international event.

Following the action of the governors of the A. C. A., Arthur W. Solomon, secre-

Simplex 90 in 17:15, with a National 40 second in 18:36. A 30-mile race was won by the National in 8:11. The sport this afternoon was somewhat marred by rain, which prevented the running of two of the events. Adair in the National won a 20-mile race in 19:37 from an E-M-F driven by Day in 22:22, and another E-M-F driven by Reeves in 22:54. Reeves beat his team mate Day in a 10-mile race, going the distance in 11:41 to the latter's 11:42. Myers in a Rambler was third in 13:22. In a 10-mile handicap the finish was Adair in a National, and Reeves in the E-M-F.

MOTORING EVENTS SCHEDULED FOR NEAR FUTURE

October 17—Nine-day good roads tour of the Atlantic Coast.
October 21-22—Commercial vehicle test of Boston American.
October 21-25—Washington-Richmond reliability of Washington Post.
October 27-28-29—Track meet at Dallas, Tex., of Dallas Automobile Club.
October 28-29—Commercial vehicle tests of New York American and Chicago American.
October 29-30—Reliability run in New Jersey, of Automobile Club of Hudson County.
November 3, 4 and 5—Race meet of Atlanta Automobile Association, Atlanta speedway.
November 5-6—Track meet at New Orleans, La.
November 5-7—Los Angeles-Phoenix road race of Maricopa Automobile Club.
November 7—Track meet of Maricopa Automobile Club, Phoenix, Arizona.
November 10-12-13—Track meet at San Antonio, Tex.

November 7-11—Five-day reliability run of Chicago Motor Club, 200 miles a day.
November 11-12—Small-car races and Grand Prix at Savannah, Ga.
November 24—Santa Monica road race, Los Angeles, Cal.
November 26-27—Motordrome meet, Los Angeles, Calif.
December 3-18—Annual salon of Automobile Club of France.
December 25-26—Motordrome meet, Los Angeles, Calif.
December 31-January 7—American Motor Car Manufacturers' Exhibit Association show, Grand Central Palace, New York.
January 7-14 and 16-21, 1911—Show of A. L. A. M., Madison Square garden, New York.
January 15-21—Annual Detroit show.
January 28-February 4—Annual Chicago show of N. A. A. M., pleasure cars.
February 6-11—Annual Chicago show of N. A. A. M., commercial cars.

Gossip of Motor Trade in Detroit

DETROIT, MICH., Oct. 10—The cut in prices announced by the E-M-F Co. last week has rather upset the plans of some of the local makers, and there are not a few sore spots as a result. That somebody would break the ice, sooner or later, had been expected, but it was not looked for so soon. The company has entered upon a vigorous selling campaign. E. LeRoy Pelletier, former advertising manager, who is just home from Europe, is back at his old job for the express purpose of handling this campaign. Closely following the announcement of the reduction in the price of the 30 and the Flanders 20, managers of the E-M-F retail branches gathered here last week. Enthusiasm was rampant and the managers went away well-pleased with the outlook for the coming season.

In the light of present events, the report published some months ago to the effect that Mr. Pelletier resigned his position with the E-M-F because his methods had aroused the displeasure of Mr. Morgan would seem to be somewhat exaggerated. The fact that he is handling the present advertising campaign would in itself tend strongly to discredit the story, but it now transpires that Mr. Pelletier's chief purpose in going to Europe was to secure ideas for a new motor cycle company in which he is largely interested along with others who have been closely identified with the E-M-F in the past.

Interested in Motor Cycle Company

The proposition is a big one and has been developed very quietly, the public getting its first inkling of it when the Pontiac Motor Cycle Co. filed articles of incorporation with the secretary of state last week, with a capital stock of \$600,000 and the following incorporators: Dr. James B. Book, Charles L. Palms, E. Le Roy Pelletier, Robert M. Brownson and Harry L. Cunningham. Dr. Book and Mr. Palms were the largest stockholders in the E-M-F before its sale to the Morgan interests. Mr. Brownson was secretary and treasurer and also legal adviser of the company until a few days ago, when he resigned to become the head of the new enterprise. Max Wollering, formerly production manager of the E-M-F, also is interested in the venture, which explains why he was recently succeeded as production manager by Charles Adams, of Port Huron. A successor to Brownson has been elected, but his identity has not been made known. Walter E. Flanders is interested in the new company. In fact, the story is afloat that he is the moving spirit in the venture and will become its active head when his contract with the E-M-F expires, but this is not stated authoritatively. In the articles, Brownson appears as the principal stockholder, with 18,500 shares; Dr. Book holds 5,000 shares; Palms, 1,000; Pelletier, 3,000; Cunningham, 2,500, and Wollering, 500. Others are H. Roy Haber-

corn, Detroit; F. A. Wade, Detroit; George W. Sherman and Richard E. Baus, Pontiac. Though reported as having admitted being financially interested in the company, Mr. Flanders does not appear in the list of stockholders.

Officers Are Elected

Officers have been elected as follows: President and general manager, Robert M. Brownson; secretary, James B. Book, Jr.; treasurer, Harry L. Stanton. The directors are Dr. Book, Pelletier, Brownson and Wollering. It is likely that Pelletier will take charge of the advertising for the company as soon as it gets under way.

A plant already is under construction in Pontiac on a tract of land comprising 19 acres on Saginaw street, directly opposite the plant of the Welch Motor Car Co. It will be in operation about January 1, it is announced, manufacturing a twin-cylinder, chain-driven machine of $3\frac{1}{2}$ horsepower and weighing about 125 pounds. A number of exclusive features picked up by Mr. Pelletier abroad will be incorporated. George W. Sherman will be sales manager. A subsidiary company is being organized with a capital of \$100,000, to operate a drop forge plant in connection with the motor cycle business. The identity of the two corporations will be much alike. The new motor cycle will be ready for the market in the spring, according to present plans. Mr. Brownson intimates that the price will be something of a surprise.

Organization of the Reo Motor Truck Co. in Lansing has been completed, articles of association having been filed with the secretary of state last Saturday. The capital stock, as previously indicated, is \$1,000,000. R. E. Olds is the principal stockholder, with 49,998 of the 100,000 shares. The others named in the articles are James H. Thompson and J. Edward Roe, both of Lansing.

The fine plant of the newly-organized Cass Motor Truck Co., in Port Huron, is nearly ready for occupancy and the company will start turning out cars within 2 weeks, it is announced. The factory will be in charge of General Manager Mathewson, formerly connected with the Randolph plant of the General Motors Co. The Cass truck will be of 1-ton capacity, with provision for a 50 per cent overload. It will have a sliding gear of the selective type, a four-cylinder, vertical motor, chain-drive and a cone clutch. The thermo-syphon cooling system is employed. The officers of the company have been elected as follows: President, John I. Turnbull, Detroit; secretary and treasurer, Alexander M. Spater, Detroit; directors, H. T. Barnum, president of the First National Bank, Port Huron; Frank Haynes, lumberman, Port Huron; Philip Higer, merchant, Port Huron; Frank Nicol and George G. Epstein, Detroit.

George A. Horner, general manager of the Rapid Motor Vehicle Co., of Pontiac,

predicts an advance of at least 25 per cent in the price of commercial cars for 1911, owing to increased cost of production through the use of better materials.

The Hupp Motor Car Co., manufacturer of the Hupmobile, will put a four-passenger touring car on the market about November 1. The car does not differ materially from the Hupmobile in structural details. It will have a wheelbase of 110 inches. In the same connection, the company announces that, henceforth, it will guarantee all its cars for life. The company is in receipt of an order for fifty-eight cars from New Zealand.

The receiver of the Demot Car Co. has entered into a contract with the Ross & Young Machine Co. to reopen the Demot plant at Frederick and Bellevue avenues for the purpose of doing the machine work and assembling Demot cars.

Robert K. Davis, manager of the United Motor Detroit Co., Michigan distributor for the Maxwell and Columbia cars, entertained the company's Michigan agents at luncheon in the Griswold house, Saturday, when the policy for 1911 was outlined. Mr. Davis announced positively that there would be no cut in Maxwell and Columbia prices.

New Club Growing

The Wolverine Automobile Club is making good progress in its campaign for new members. Invitations are being extended to motor car manufacturers, road commissioners, judges, attorneys, doctors, and to motor car owners generally. Before the next meeting, which has been set for November 7, it is expected that the membership will have reached 600. The question of securing permanent clubrooms probably will be decided at that time. A chauffeurs' club has been organized here, the principal object being to work in the interest of good roads.

As a part of the night school work in the Detroit public schools, a special course in motor car engineering, construction and design has been inaugurated in the Central high school, with thoroughly competent instructors in charge. The course is proving very popular and probably will be continued as a permanent feature of the night schools.

AT ILLINOIS STATE FAIR

Springfield, Ill., Oct. 10—Motor car exhibits formed an important item at the Illinois state fair, held here September 30 to October 8, thirty makes being shown. Each reported a good business, all closing agency contracts and many making large retail sales. The cars displayed and those in charge were as follows: Midland, C. S. Pope and W. H. Burch, of Moline. Winston, George Zerwick, of Chicago, and Harvey Case and Karl Easterly, of Nokomis, Ill. Halladay, E. E. Potter, Peoria, superintendent of Illinois agencies; C. Herbel Morris, sales manager; N. A. Bolle, L. C. Mulford and G. J. Spence, all of Moline; the Westcott, Champaign-Peoria

Motor Co., J. L. Weiss, L. S. Allen and W. H. Miller in charge; Overland, H. D. Parks, Springfield, Ill., and J. F. Tureman, Virginia, Ill.; Davis, C. C. Davis, Bloomington, Ill., and B. C. Emerson and E. F. McConaha, both of Richmond, Ind.; Staver-Chicago, Harry B. Staver, Chicago, general manager; L. P. Halladay, salesman, and L. R. Maxwell, sales manager, both of Chicago, and Frank D. Bants, Peoria, manager for central Illinois district; Case, R. D. Huntley, manager of Peoria branch; Zimmerman, Zimmerman Mfg. Co., W. R. Davis, salesman; Inter-State, Gleason and Gramm truck, E. G. Isch & Co., Peoria; Lexington, W. F. Seel, sales manager; Auburn, Elkhart Carriage Co., and D. L. Bakman, Danville; Regal, A. W. Sikking & Co., Springfield; Black Crow, E. C. Troot, advertising manager; Glide, Bartholomew Co., Peoria; Rambler, A. B. Johnston, Springfield; Jackson, Ralph Temple Automobile Co., Chicago, and Harold P. Bisch, Springfield; Cadillac, J. M. Miller, Decatur; Studebaker-Garford, E-M-F and Flanders, Studebaker Brothers Mfg. Co.; Mitchell and Studebaker, R. E. Hatcher, Springfield; Chalmers, O. W. Hatcher, Springfield; Stoddard-Dayton, E. R. Haas, Springfield; Cutting, J. R. Opp, Ottenbein, Ind.; Velie Motor Vehicle Co., Velie, W. J. Johnson, salesman.

WORKING ON SHOW PLANS

New York, Oct. 8—Plans for the remodeling of the interior of Madison Square garden for the A. L. A. M. show of January 7-21 have been completed. Already men are laying the concrete bases for the structural steel work which will be used throughout the building. The steel work will be the main support of the elevated platforms and will add a tone of solidity to the amphitheater. The raised platforms will be extended to the aisle of the main floor, thus forming a roof for the spaces in the outer ring. The front balcony similarly will be extended. Complete cars will be shown on the main floor, raised platform and balcony of the amphitheater, and in the exhibition hall at the right of the entrance and in the basement. All that is new or old in the accessory line will be on exhibition on the outside of the raised platform and first balcony nearest to the walls of the building, in the second balcony and in the concert hall. The forthcoming show will be divided into two parts, one of which will be devoted entirely to passenger or pleasure vehicles. This will be known as part 1, and will be held during the week of January 7 to 14. Part 2, which will be devoted to commercial vehicles, will be held January 16 to 21.

Plans for the independent show in the Grand Central palace December 31-January 7 are going on. The show will be under the auspices of the American Motor Car Manufacturers' Exhibit Association and temporarily C. C. Conant and Herbert Longendyke, of Troy, N. Y., will be at the helm.

Great Demand for Chicago Space

NEW YORK, Oct. 8—About seventy-five manufacturers attended the drawing for space at the Chicago show which took place at the office of the National Association of Automobile Manufacturers on Wednesday. The number of applications was the largest on record. In the pleasure vehicle section there were 101 applications and only ninety-six spaces available, so that five were, of necessity, left out. There were forty-two applications in the commercial vehicle section who took about 80 per cent of the main floor of the Coliseum. There were also five whose applications arrived after the date of closing who will occupy practically all of the remainder of the floor. Before show time the waiting list will be even longer, for there still are manufacturers who have not realized that show time is close at hand.

All of the gallery of the Coliseum and second floor of the Coliseum annex has been taken by members of the Motor and Accessory Manufacturers, leaving only the gallery of the First Regiment armory for other makers of accessories. Of these it is possible to take care of about forty; the remainder of the applicants are now on a waiting list.

Applications from makers of commercial vehicles for such space as remains in the Coliseum and in the armory will be received up to October 31. A section will be set aside for motor cycles and the remaining space, if any, will be allotted to makers of pleasure vehicles, starting with those who were unable to obtain space during the first week of the show. Car makers to whom space has been allotted are as follows:

PLEASURE VEHICLE SECTION

Coliseum—Winton Motor Carriage Co., Buick Motor Co., Stevens-Duryea Co., Chalmers Motor Co., National Motor Vehicle Co., Pierce-Arrow Motor Car Co., Moline Automobile Co., Hudson Motor Co., Lozier Motor Co., Reo Motor Car Co., H. H. Franklin Mfg. Co., Olds Motor Works, Packard Motor Car Co., Thomas B. Jeffery Co., F. B. Stearns Co., E-M-F Co., Cadillac Motor Car Co., Peerless Motor Car Co., Maxwell-Briscoe Motor Co., Willys-Overland Co., Pope Mfg. Co., E. R. Thomas Motor Co., Locomobile Co. of America, Dayton Motor Car Co., Woods Motor Vehicle Co., Columbia Motor Car Co., Atlas Motor Car Co., Premier Motor Mfg. Co., Knox Auto Co., White Co., Matheson Motor Car Co., American Locomotive Co., Baker Motor Vehicle Co., Corbin Motor Vehicle Corp., Elmore Mfg. Co., Haynes Auto Co., Metzger Motor Car Co., Mitchell-Lewis Motor Co., Fal Motor Co.

Coliseum Annex—Brush Runabout Co., Studebaker Brothers Mfg. Co., Nordyke & Marmon Co., Inter-State Auto Co., Jackson Auto Co., Bartholomew Co., Babcock Electric Carriage Co.

First Regiment Armory—Hupp Motor Car Co., Waverley Co., Dorris Motor Car Co., Kissel Motor Car Co., Selden Motor Vehicle Co., W. H. McIntyre Co., Pierce Motor Co., American Motor Car Co., Cartecar Co., Austin Automobile Co., Garford Co., Royal Tourist Car Co., Anderson Carriage Co., Moon Motor Car Co., Pullman Motor Car Co., Buckeye Mfg. Co., Speedwell Motor Car Co., Flat Automobile Co., Diamond T. Motor Car Co., Auburn Automobile Co., Streater Motor Car Co., Simplex Motor Car Co., Black Mfg. Co., Rauch & Lang Carriage Co., Ohio Motor Car Co., Courier Car Co., Midland Motor Co., Chadwick Engineering Works, Staver Carriage Co., Schacht Motor Car Co., C. P. Kimball & Co.

Coliseum Basement—Southern Motor Works, Great Western Auto Co., Metz Co., W. A. Paterson Co., Ohio Electric Car Co., Enger Motor Car Co., Benz Auto Import Co., Cole Motor Car Co., Westcott Motor Car Co., Diamond Auto

Co., Otto Gas Engine Works, Middleby Auto Co., Lexington Motor Car Co., Carriage Woodstock Co., B. C. K. Motor Car Co., Rayfield Motor Car Co., McFarlan Motor Car Co., Parry Auto Co.

COMMERCIAL VEHICLE SECTION

Mack Brothers Motor Car Co., Mals Motor Truck Co., U. S. Motor Truck Co., White Co., Hart-Kraft Motor Co., Studebaker Brothers Mfg. Co., Alden Sampson Mfg. Co., Courier Car Co., Peerless Motor Car Co., Packard Motor Car Co., W. H. McIntyre Co., Waverley Co., Reo Motor Car Co., Willys-Overland Co., Cartecar Co., Grabowsky Power Wagon Co., Garford Co., Avery Co., Pope Mfg. Co., American Locomotive Co., Rapid Motor Vehicle Co., Pierce-Arrow Motor Car Co., Metzger Motor Car Co., H. H. Franklin Mfg. Co., Knox Automobile Co., Kissel Motor Car Co., Gramm Motor Car Co., Kelly Motor Truck Co., Harder's Fireproof Storage and Van Co., Adams Brothers Co., Randolph Motor Car Co., Chase Motor Truck Co., Saurer Motor Trucks, Chicago Commercial Car Co., Lansden Co., Federal Motor Truck Co., Automobile Maintenance and Mfg. Co., Washington Motor Vehicle Co., Economy Motor Car Co., Marquette Motor Vehicle Co., Monitor Automobile Works, Clark Delivery Car Co.

CARS IN VEHICLE SHOW

Chicago, Oct. 11—Manufacturers of motor cars have had many fine opportunities this summer and early fall to exploit their 1911 product out of doors at state fairs and the like, but it was not until recently that indoor expositions of the next season's models have been staged. Chicago now is enjoying a sight of new models. This display now is on, the motor car division of the national vehicle show which opened in the Chicago Coliseum yesterday being no inconsiderable part of that affair. The first day at the show saw twenty-four different makes of cars on the floor which were represented by sixty-five machines. There is no separate section for the motor cars which are distributed around the big building, many of them comprising part of a vehicle exhibit. In the annex it looks more like a motor car show, for there are located most of the commercial motor vehicles. The Martin Carriage Works, of York, Pa., which has the largest space in the show, has on view three commercial motors in addition to its regular line of carriages and wagons. Here also are two huge Sternberg trucks, and also the Kissel-kar leviathan which carried the soldiers at the Elgin road races. The Hupmobile, Cutting and Owosso lines also are found in this building.

In the Auditorium proper there are eighteen different makes, the largest exhibit being that of the Warren-Detroit which shows seven cars, including one motor ambulance. The International Harvester has three cars, one of which is a commercial proposition. In the Studebaker exhibition there is one each of the Studebaker, E-M-F and Flanders. The Powercar from Cincinnati, a newcomer in show circles, makes its bow here, one model, that of a touring car, being shown. Another newcomer is the Ames, which is manufactured in Owensboro, Ky., which is showing two cars. In addition there are five Imperials, two Schachts, three Pater-sons, three Lamberts, four Whittings, one Staver, three Readings, six Michigans, made by the Michigan Buggy Co.; two Zimmermans and four Abbott-Detroits.

CHERRY CIRCLE WINS AUTUMNAL INTERCLUB

CHICAGO, Oct 8 —Already in possession of the interclub reliability challenge trophy because of the St. Joe run in July, the Chicago Athletic Association has added to its motoring laurels by defeating its old rival, the Chicago Automobile Club, in a 2-day reliability match to Waukesha, Wis., and return, on Thursday and Friday of this week, which victory was achieved in the contest for the L. E. Myers trophy. The C. A. A. won by quite a margin, its score being 543 points as against the 802-13 of the Chicago Automobile Club. As in the three other contests held between the two clubs, the affair was for amateur drivers only and was run under grade 3 of the American Automobile Association rules.

Interesting in connection with this reliability was the forcing of the issue in the matter of the disqualification of the Premier from contests run under the sanction of the American Automobile Association. This was the first time since the A. A. A. edict went forth that positive action has been taken on Premier entries. The Chicago Athletic Association had listed four members who owned Premier cars, while there were two Premier entries from the Chicago Automobile Club, one of the latter being that of Sidney S. Gorham, who has represented the Premier company in a legal way since the start of the Glidden controversy. At the meeting of the contestants held the night before the run, Referee F. E. Edwards announced that the



MYERS AUTUMNAL TROPHY—CAPTAINS KNISELY, C. A. A., AND RAY, C. A. C.

Premier cars would not be allowed to start because of the A. A. A. disqualification, notice to that effect having been officially received by him from Chairman Butler, of the A. A. A. contest board.

Attorney Gorham was present at the meeting and made a vigorous fight to have the Premier entries recognized. When requested to withdraw the cars peacefully, he declared that he would prefer to be

thrown out, as he expressed it, putting on the two clubs the onus of the action. The embarrassment that such an action would cause to both organizations was readily recognized by the clubmen and there was a heated debate, in which Attorney Gorham was severely criticised for his action, and which resulted in

the decision of both clubs to abide by Chairman Butler's ruling and refused to allow the Premiers to compete. While regretting that the A. A. A. edict worked a hardship on owners of Premier cars who might desire to participate in such affairs as the interclub, the clubmen put themselves on record as being ardent supporters of the national organization. The evidence showed that Gorham had been largely instrumental in the entering of the six Premiers, which evidence told heavily against him when the clubmen passed upon the case.

This tilt left a bitter taste in the mouth until Thursday morning, when the run started. Then everyone forgot it in the excitement of the match. There had been thirty-five entries left after the rejection of the six Premiers, but despite the fact it rained all Wednesday night and was raining at the start Thursday morning, twenty-five cars lined up for the match in front of the C. A. A. The clubmen were repaid for their gameness by the weather man, who stopped the showers and gave the sun a chance, so that before the run was an hour old the cars were kicking up the dust in the country roads near Elgin and the sun was shining.

Originally the first day's run was to have been 165 miles to Waukesha, but owing to the heavy condition of some of the roads, the clubmen took a short cut from Lake Geneva to Waukesha, reducing the distance by 40 miles. The Chicago Automobile Club team was the greatest sufferer the first day, when it accumulated 690 points, to the 203 of the Cherry Circle. Three men were largely responsible for this, Eggermann in a Rambler drawing 256 points for work done in replacing a front wheel bearing and for finishing after the time limit of 2 hours had expired. Tuttle, with the Chadwick, rolled up a big bunch of demerits by having a spring repaired and was debited 237 points, while Bosch, with the Stearns, brought about 111 points penalization for work and being late. On the other side, Cartoonist Briggs had



INTERCLUB RUN STARTS FROM WAUKESHA THE SECOND DAY

clutch trouble with his Chalmers, which made him late at the noon control, and altogether he was penalized 117 points.

The Chicago Automobile Club team did better work the second day, and only had half as many points against it as its rival. Its chances of victory, however, were extinguished by the fact that Bosch's Stearns was so incapacitated that it had to be withdrawn, which cost the C. A. C. 150 points. The Stearns had broken its reverse and its brakes were not working. Eight of the C. A. C. dozen had perfect scores the second day, as against seven for the athletic club. Briggs again was the main offender on the Cherry Circle side the second day, with 216 points against him. He had all kinds of carbureter and tire trouble, and was unable to finish until 8:30 in the evening. Davis, with the Chalmers on the C. A. A. team, had to fix an oil lead and was late in consequence, for which he drew 173 points, after having made a perfect score the first day. Outside of these big offenders the work of the other drivers was remarkably good. The demerits awarded were mostly for engine stops, for taking on supplies outside of controls, and for being late. The nearest approach to an accident was when Captain Ray, of the C. A. C., went into the ditch near Harvard, from which he was pulled by several of the contestants.

There were several novel features in connection with this match, chief of which was the commissary department, which was under the supervision of the Chicago Automobile Club. Fearing the poor meals generally encountered at the average coun-



CLUBMEN EATING PICNIC LUNCH AT ELGIN THE SECOND DAY

try hotel, the clubmen secured from the White company's local representative a White gasoline truck, which was loaded

with things to eat here in Chicago, and sent to the noon controls at Harvard and Elgin, where picnic lunches were served.

STANDING OF CONTESTANTS IN CHICAGO'S INTERCLUB RELIABILITY

CHICAGO ATHLETIC ASSOCIATION				CHICAGO AUTOMOBILE CLUB			
Driver and car	1st day	2d day	Total	Driver and car	1st day	2d day	Total
C. T. Knisely, Palmer-Singer	9	4	13	A. S. Ray, Stearns	71	6	77
W. G. Beek, Oakland	0	0	0	E. C. Patterson, Packard	0	0	0
W. H. Chamberlain, Rambler	4	9	13	W. Egermann, Rambler	256	0	256
C. H. Thorne, Diamond T.	2	0	2	C. Bosch, Stearns	111	150	261
C. A. Briggs, Chalmers	117	216	333	N. H. Van Sicklen, Jr., Ap	0	0	0
S. E. Miller, Packard	0	0	0	F. X. Mudd, Ford	7	0	7
W. C. Thorne, Palmer-Singer	0	0	0	L. R. Parker, Rambler	0	0	0
W. F. Grower, Diamond T.	0	0	0	T. J. Hyman, Chalmers	5	0	5
L. T. Jaques, Peerless	0	0	0	J. T. Brown, Velle	1	7	8
A. J. Vyse, Thomas	0	0	0	B. B. Ayers, Cadillac	2	0	2
W. W. Harless, Mora	71	3	74	G. F. Griffin, Peerless	0	0	0
W. E. Davis, Chalmers	0	173	173	P. J. McKenna, Pierce-Arrow	0	0	0
Totals	203	340	543	C. A. Tuttle, Chadwick	237	13	250
				Totals	690	176	866



FOUR PERFECT-SCORE CARS IN CHICAGO INTERCLUB MATCH

1—W. F. Grower, C. A. A., Diamond T., President E. C. Brown of C. A. A. on Running Board. 2—W. G. Beek, C. A. A., Oakland. 3—P. J. McKenna, C. A. C., Pierce-Arrow. 4—N. H. Van Sicklen, Jr., C. A. C., Apperson.

REMARKABLE WORK IN GAILLON HILL-CLIMB

PARIS, Oct. 1—After standing for 4 years unbeaten and unbeatable, the Darracq record set up by Lee Guinness's eight-cylinder 200-horsepower racing monster has been swept off the board in this year's contest held on Gaillon hill. The French racing monster covered the flying kilometer, with an average grade of 9 per cent, in :25, being at the rate of 89.5 miles an hour. This year the German Erle, with a four-cylinder Benz car of 7.2 by 7.8 inches bore and stroke, roared up the Normandy grade in 23 seconds, or at the rate of 97.5 miles an hour. The German car is one of the Prince Henry type, with hemispheric combustion chambers, valves on opposite sides and inclined, the operation being by rocker arms. There are two inlets and two exhausts for each cylinder. Two independent magnetos fire the mixture simultaneously at different points. Total weight of the car loaded was 3,262 pounds.

Erle had as the only rival in his class Camille Jenatzy, of Mercedes fame, naturally with a Mercedes car. But with four cylinders of 6.9 by 6.2 inches bore and stroke, and a total weight of 3,231 pounds, it was impossible for him to hold up against the Benz. He got up the hill in :26%. The actual contest gave the cars a standing start, with a run of only 250 yards on the level and an easy curve before crossing the tape and starting on the 9 per cent portion of the kilometer hill. With the short run allowed he never could get his motor turning fast enough for the gear ratio he had adopted, and on the lower gear it raced. It is doubtful, however, if it could have equaled the Benz under any conditions. There was only one other competitor in this section, a grand prix Motobloc of 6.5 by 5.5 inches bore and stroke, which had been originally entered as an unlimited tourist and at the last minute had to be stripped for the racer class. It made a poor showing, however, its time for the kilometer being 42 seconds.

Germany provided the only car in the 130-kilometer racing class, an Opel, which, it is interesting to note, had been built for the grand prix which was killed by its promoters soon after it was announced. It got up the hill in :26%, or only 1/2 second slower than the big Mercedes, and 2 seconds faster than last year's Brasier grand prix racer of 6 inches bore. The car has a four-cylinder motor of 5.1 by 7.8 inches bore and stroke.

If Germany had a monopoly of the big cars, France had all the little fellows. Thus in the class the voiturette cup type, single-cylinder 100 millimeters or 3.93 inches, twins 80 millimeters or 3.14 inches, and fours 65 millimeters or 2.55 inches, the Lion-Peugeot climbed the hill in :38, its companion, a one-lunger from the Lion-Peugeot factory, did good work in :41%; the same driver on a new-four cylinder

model could only make :45%. The twin-cylinder motor of 3.1 by 11 inches bore and stroke, has three valves per cylinder, and weighs complete, with driver aboard, 2,050 pounds. The one-lunger is a last year's model designed by Boudreau-Vernet, its peculiarity being a stroke of 10.6 inches and six valves for the one cylinder. Its weight is 2,131 pounds. The four-cylinder, an entirely new model, lost through defective spark plugs. It has four V-shaped cylinders cast en bloc but without any metal in the upper portion of the V. Intake valves are in the head and operated by rocker arms, and the exhaust valves are carried below and in a horizontal position. A vertical spindle operates the two front exhaust valves directly by a rocker arm, drives an overhead camshaft operating the intake valves, and from the extremity of this shaft a bevel gear meshes with another and shorter vertical spindle operating the two rear exhaust valves. There are two magnetos, each one supplying the current for two cylinders only. Weight of the racer, which is chain-driven, is 2,160 pounds.

In the touring section fastest work was done by Ferreol Jenatzy, brother of the better known Camille, who took a big Pipe up the hill in :34%.

Getting down to the smaller models, the French makers made their best showing with a couple of Labor long-stroke aviation motors fitted to ordinary chassis. Halton, alone in his section, showed :40% with a Labor racing motor of 3.9 by 8.2 inches bore and stroke. The motor is a four-cylinder monobloc declared to develop 70 horsepower. The valves are on opposite sides, operated from below, but to reduce the area of the combustion chamber they are considerably inclined. The pistons are of steel, all their lower portion drilled out to reduce weight, the connecting rods are tubular, and the crankshaft is mounted in three ball bearings. Lubrication is by constant level splash and by force feed through the hollow crankshaft.

In the smaller class for cars of not more

than 3 1/2 inches bore, first place was taken by Pierron with a Labor motor identical except in dimensions. It has a bore of 3.5 inches and a stroke of 5.9 inches. Its time was :41%. The others in this class offered little interest.

In the small touring car class, with bore limited to 2.7 inches, it was expected that George Sizaire would repeat his victory of last year with a new commercial model of 2.7 by 6.6 inches bore and stroke. The motor seized, however, when two-thirds up the hill. This allowed first place to be taken by a single-cylinder Crespelle of 3.9 by 8.2 inches bore and stroke; time, 1 minute 1 1/2 seconds.

In addition to a classification according to pure speed in their respective classes, there was a further classification on a technical formula, as follows:

$$R = \frac{(P(12+I)+0.06S V^2)}{N D^{2.4} L^0.6}$$

in which

P represents weight in tons, passengers included.

V speed in metres per second.

I average grade in millimetres per metre.

D bore of the motor.

L stroke of the motor.

N number of cylinders.

S = 0.8 for racing voiturettes.

S = 1 for racing cars.

S = 1.25 for touring voiturettes.

S = 1.8 for touring cars.

On this formula the following order of merit was established:

- 1—Lion-Peugeot single cylinder, Boillot.
- 2—Lion-Peugeot twin cylinder, Goux.
- 3—Labor, Halton.
- 4—Pierron, with Labor motor, Pierron.
- 5—Opel, Joerns.
- 6—Benz, Erle.
- 7—Crespelle single cylinder, Crespelle.
- 8—Bugatti four-cylinder, Darrichta.
- 9—Benz, Violet.
- 10—Pipe, Jenatzy.

IMPORTANT TRADE DECISION

Detroit, Mich., Oct. 9—Of great interest to the motor industry is the decision of Judge Donovan, of Detroit, who has ruled that blue print ideas are actual property of value. Judge Donovan handed down his opinion in the suit brought by Charles B. King and Ora J. Mulford to recover, from Julius Holtenberger and others, blue prints and tracings of the King motor car, which Holtenberger had been hired at the rate of \$30 a week to copy. Holtenberger claimed that some of



FRITZ ERLE IN BENZ WITH 7.2 BY 7.8-INCH MOTOR

his ideas were incorporated in the plans and that he was to get 5 per cent of the stock as payment when a company was formed. He took the plans to Canada and disposed of them there, and when criminal proceedings were taken against him, Police Justice Jeffries ruled that there was no property in an idea and that there could be no larceny in the abstraction of blue prints except to the extent of the value of the materials on which they were drawn and the work put on them.

Judge Donovan took an entirely different ground. He held that the prints and plans were worth from \$20,000 to \$30,000, that the plaintiffs were the legal owners and that they had been carried to Canada wrongfully. The claim of part ownership put forward by Holtenberger was declared to be wholly without foundation. The opinion continues:

"The bill charges an attorney as one of the conspirators with Greenaway, Preston and Holtenberger. I find the attorney was grossly misled by Holtenberger, who unfairly stated his case, and so gained the very bad advice on which he acted. This fact applies to Preston and Greenaway; that is, no independent, actionable conspiracy has been clearly proven as to the defendants aside from Holtenberger. And fraud cannot be made of suspicions; it requires convincing proof."

KOPMEIER DEMURRUR SUSTAINED

Milwaukee, Wis., Oct. 12—The demurrer of the Kopmeier Motor Car Co., of Milwaukee, in the action brought by the Velie Motor Vehicle Co. for \$10,000 damages on allegations of breach of contract, has been sustained. The Kopmeier company maintained that instead of a sales contract, a contract for agency only existed between the two concerns, but that the Velie company had reserved the right to revoke the contract, a right which had not been given the defendant. On this showing the court sustained the demurrer. The Kopmeier company was made a defendant in the damage action at the same time that suit for \$500,000 damages on allegations of conspiracy and a combination in restraint of trade was brought against twenty-five

manufacturers, all members of the A. L. A. M. The Velie company claimed that the A. L. A. M. forced the Kopmeiers to drop its agency for the Velie, an unlicensed car, because the Kopmeiers were also handling licensed cars. This suit is still in the courts at Milwaukee, but only four of the original defendants are being held subject to the complaint.

DATE SET FOR SELDEN APPEAL

New York, Oct. 11—A motion was heard yesterday by the United States circuit court of appeals for the second circuit, to give preference to the hearing of the appeal in the suits under Selden patent against the Ford Motor Co. and Panhard company and the other test suits. The court has set these cases, which is an appeal from the decision of Judge Hough sustaining the Selden patent, at the head of the court of appeals' calendar for hearing November 9, 1910. In the case of injunction under Selden patent against John Wanamaker, a motion was brought by the defendants to suspend. This was opposed and Judge Hough denied the application for suspension, so that the injunction continues in force.

RACING AT DES MOINES

Des Moines, Ia., Oct. 10—The Jackson won three out of the six races in the first annual meet of the Des Moines Automobile Racing Association here Thursday. The races were marred by the death of J. L. Meredith, of Mason City, Iowa, dealer there for the Hudson, and the serious injury to John Wallace, a Reo driver in the employ of the Sears Auto Co. As the cars rounded the turn on the ninth lap of the 15-mile free-for-all the Hudson's front wheel struck the rear wheel of the Reo. The Hudson turned turtle and Meredith was thrown against the fence, his head striking a post. His skull was fractured at the base of the brain and he died almost instantly. Wallace was badly cut about the head and body, but regained consciousness before he was carried from the track.

The races were held on the 1/2-mile track at the Iowa state fair grounds. Aside from the fatalities the races were the best ever

held in the state. The Jackson took first in the races for cars listing from \$1,500 to \$2,000, the one for cars listing \$1,500 and under, and the one for cars listing \$2,000 and over. All the entries were stock cars.

Summary:

Three miles for one-cylinder equipped cars—Teetge, Cadillac, won; Kramer, Cadillac, second. Time, 6:55.
Five miles, cars listing \$1,000 and under—Meredith, Hudson, won; Sweaney, Ford, second. Time, 6:50 1/2.
Five miles, cars listing \$1,500 to \$2,000—Smith, Jackson, won; Adolph, Apperson, second; Means, Moline, third. Time, 6:37.
Five miles, cars listing \$1,500 and under—Smith, Jackson, won; Sweaney, Ford, second; Ross, Reo, third. Time, 6:35 1/2.
Five miles, cars listing \$2,000 and over—Smith, Jackson, won; Adolph, Apperson, second; Grand, Apperson Jack, third. Time, 6:44 1/2.

OUTDOOR SHOW FOR NEW YORK

New York, Oct. 11—Announcement has been made that the Licensed Automobile Dealers of New York will take part in an exhibit of cars at the international aviation tournament, which is to be held at Belmont park, October 22 to 30. M. J. Budlong, president of the association, has secured the exclusive right for the members to show their cars at the meeting. The floor space in the betting ring and under the grandstand amounts to 40,000 square feet available for exhibition purposes. The show will be the first outdoor affair ever undertaken by the New York dealers and, in connection with the aviation meet, is expected to draw an attendance of not far from 500,000. The meeting has been sanctioned by the A. L. A. M.

TEXAS' LATEST ROAD SCHEME

Dickinson, Texas, Oct. 8—The members of the Oleander Country Club, the club house and grounds of which are situated at Dickinson, are giving active support to the proposition of constructing a speedway between Galveston and Houston, through this place. This proposed motor course is being actively promoted by Dr. J. M. Head, of Galveston, and a number of motor enthusiasts of that city, Houston, and the towns along the route. It is planned to construct the speedway from the mainland side of the new causeway, that is being built across Galveston bay, to Houston, in as near an air line as possible. The distance is about 40 miles, and an additional 10 miles on the Galveston island side is to be constructed, making 50 miles in all. It is proposed that the course shall connect with the beach on the gulf side of the island, where a straightaway course of 30 more miles is available. The speedway, between the mainland end of the causeway and Houston, will be 100 feet wide, built of rock foundation, with mudshell surfacing, firmly rolled by a heavy machine. The course will be fenced the entire way. It is estimated that the construction of the 40 miles of speedway will be approximately \$500,000. The project is meeting with such great favor that it is thought there will be no difficulty met with in raising the money necessary to make the important improvement.



ERLE'S BENZ CLIMBING GAILLON AT 97.5 MILES PER HOUR

Mechanical Points of Little Cars



ZUCCARELLI IN HISPANO, THE WINNER, TAKING A TURN

PARIS, Oct. 1—Now that the great voiturette race has taken its place in history, there is general comment on the phenomenal work done by the small cars. The feature of the cars entered was the proportion of four-cylinder motors. In all previous races single-cylinder cars have predominated and never have been beaten. On this occasion there were thirteen four-cylinder cars, one two-cylinder motor, and three one-cylinder. Hispano-Suiza presented three four-cylinder models with the maximum bore of 2.5 inches and a stroke of 7.8 inches; this gives a ratio of stroke to bore of practically 3.07 to 1. The Spanish engineers had been satisfied to develop their motor on standard lines. Thus the four cylinders are in a single casting, with valves on opposite sides, the diameter of the valves being considerable, but the valve chambers reduced to the smallest possible area. Timing gears are enclosed at the forward end of the motor, the high-tension Bosch magneto being driven off the right-hand side, and the water pump off the left-hand side. The head of each cylinder is dome-shaped, the steel pistons have flat heads, are of unusual length and fitted with three compression rings. Tubular connecting rods are employed. The crankshaft is carried in three ball bearings. B. N. D. steel is employed for crankshaft, camshaft, connecting rods, etc. The motor does its best work at 2,300 revolutions a minute, when it develops 45 horsepower, with an average lineal piston speed of 15 meters a second, or almost 3,000 feet a minute. Lubrication is of the force-feed type by a pump worked off the extremity of the intake camshaft, and the pressure on the gasoline also is maintained by an air pump worked off the motor. The drive is taken through a multiple-disk clutch to a three-speed gearbox, and by propellershaft to the rear live axle, the number of teeth in the rear axle being seventeen and forty-seven. Rudge-Whitworth demountable wire wheels

are used. The total weight of each of the three cars, without oil or gasoline, is 1,455 pounds.

No attempt was made by the Hispano-Suiza engineers to gain speed by reducing wind resistance. The cars carried large square honeycomb radiators, the bonnet stopped at the dash, and the rear of the two seats was a sloping platform on which a square wheel was mounted. It is certain that with a pointed radiator and a specially-shaped rear the cars could have been made to gain at least 6 miles an hour.

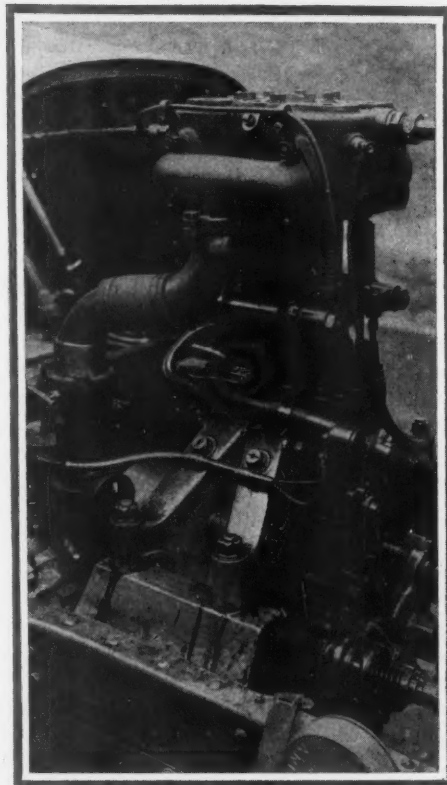
The Lion-Peugeot people, who last year ran with two single-cylinder cars and one twin-cylinder V motor, this year produced entirely new models, having the defect of not being thoroughly tuned up. Detailed information regarding the motors is most jealously guarded. The cars were brought to Boulogne at night; while they were being weighed in a big screen was placed

CHARACTERISTICS OF THE CARS

Car	Cyl.	Bore and Stroke	H.P.
Hispano-Suiza	4	2.5x 6.5	40
Lion-Peugeot	2	3.1x10.2	38
Lion-Peugeot	4	2.5x11	45
Corre-Licorne	1	3.9x11.8	38
Corre-Licorne	1	3.9x10	34
Calthorpe	4	2.5x 6.6	38
De Bazelaire	4	2.5x 6.2	30
Tribet	4	2.5x 7	35
D. S. P. L.	4	2.5x 5.5	36

All gearsets selective except first Corre, which is progressive.

round them, and before the mechanics would dismount the cylinders the hall had to be cleared of all but officials. During



INTAKE SIDE, DE DION SINGLE-CYLINDER



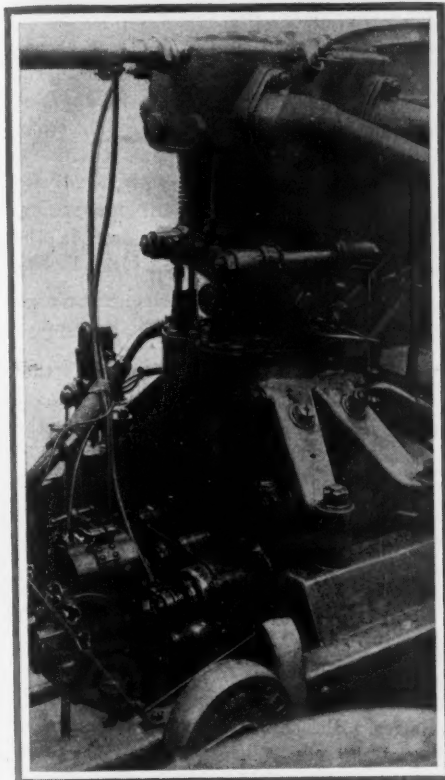
VIEW OF ENGINE USED IN HISPANO-SUIZA, WINNER OF RACE

RUNNING IN FRENCH ROAD RACE

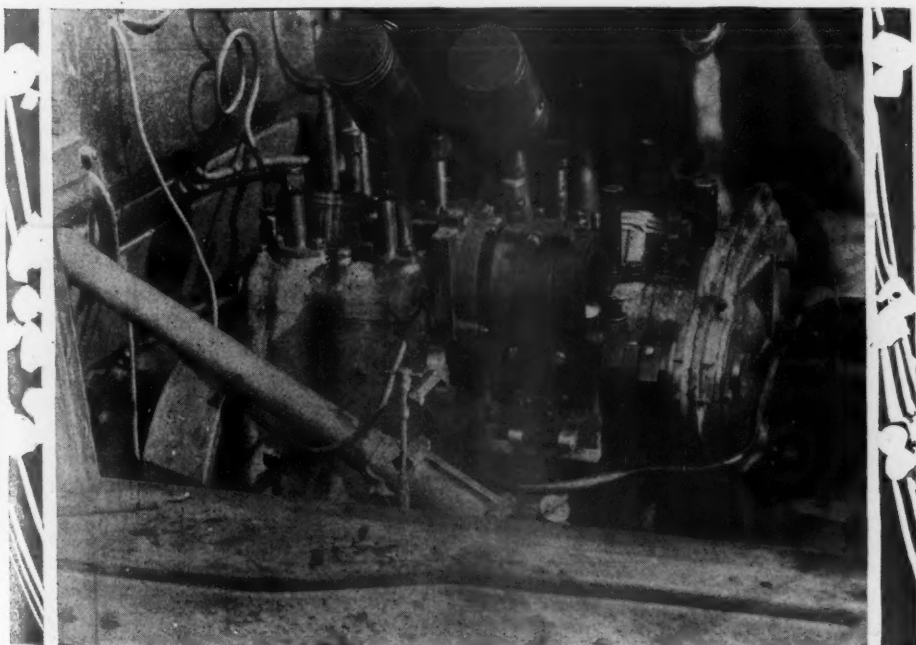
Clutch	Drive	Speeds	Carbureter	Tires
Disk	Shaft	4	Claudel	810x90
Cone	Chain	4	Claudel	810x90
Cone	Chain	4	Claudel	810x90
Cone	Shaft	3	Zenith	810x90
Cone	Shaft	4	Zenith	810x90
Disk	Shaft	3	Zenith	810x90
Disk	Shaft	3	Zenith	810x90
Cone	Shaft	3	Zenith	810x90
Disk	Shaft	3	Zenith	810x90

All magneto Ignition. Lion Twin has two magnetos.

the race Boillot had to lift his bonnet twice in the presence of the crowd to flood his carbureter, but he had it on again in a

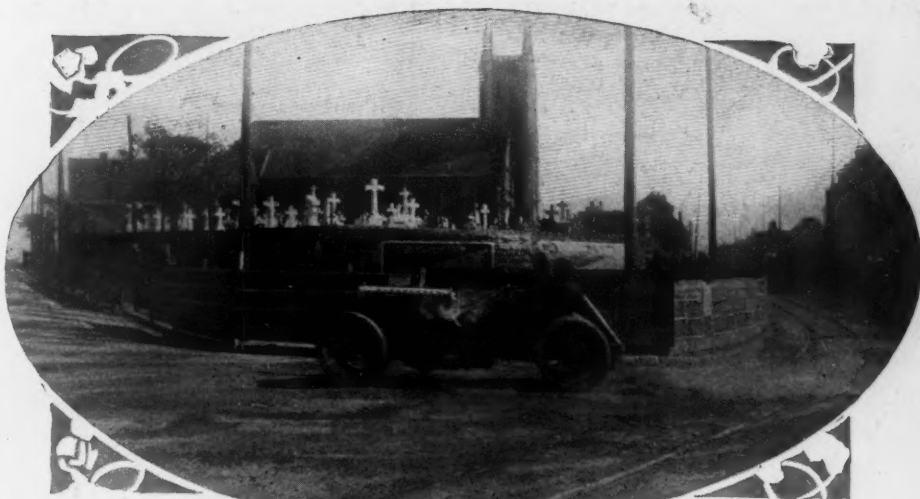


EXHAUST SIDE, DE DION SINGLE-CYLINDER



CYLINDERS TAKEN OFF HISPANO-SUIZA—NOTE THE STEEL PISTONS

Europe's Latest Ideas in Racing



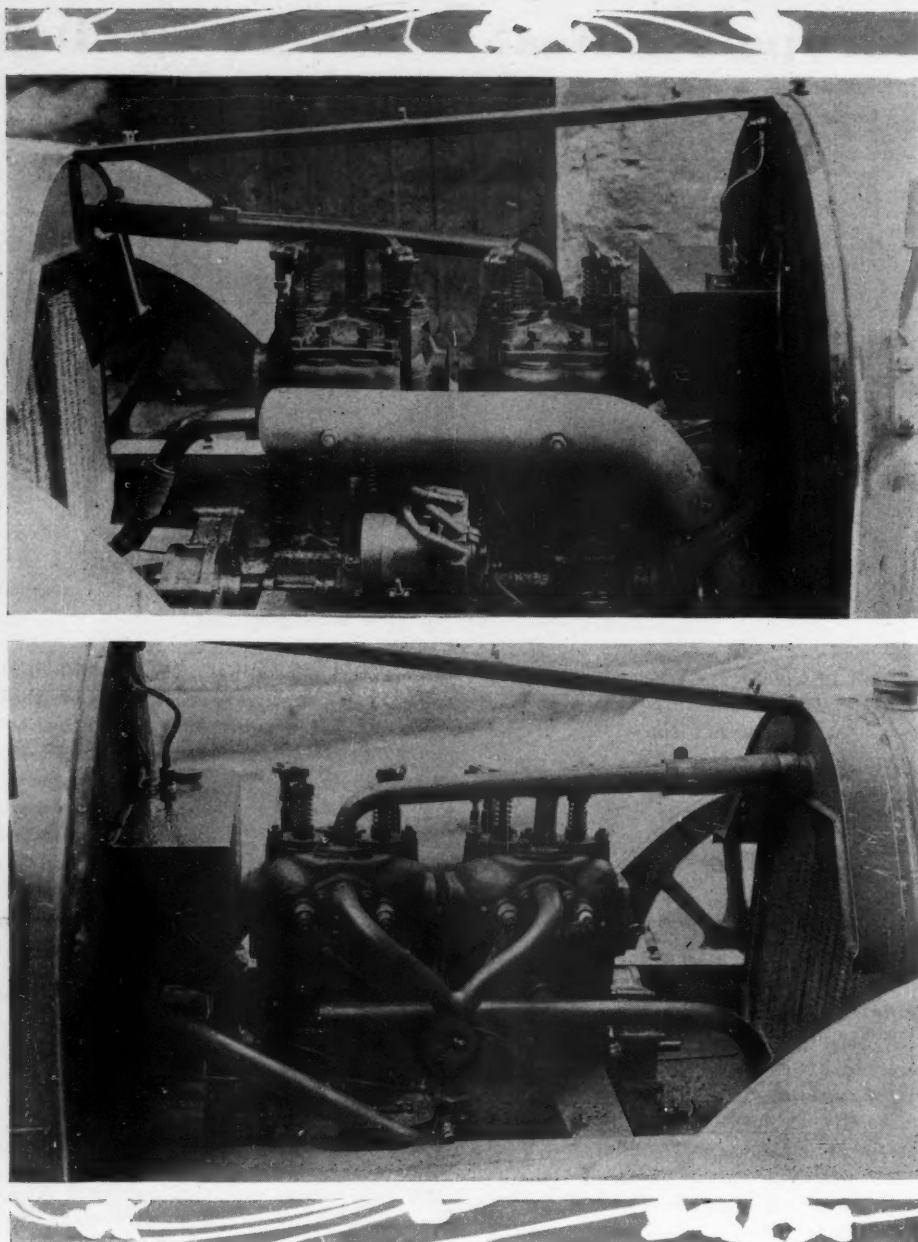
ZUCCARELLI ROUNDING GRAVEYARD TURN NEAR BOULOGNE

fraction of a second. When the race was over he placed a man in charge of the cars, with orders that the bonnet should not be raised, and, to be doubly sure, took his lunch in such a position that he could watch the machine all the time.

Goux's two-cylinder Lion-Peugeot motor was half exposed through the cutaway bonnet, and as this covering was abandoned during the race, a fair opportunity was given of examining the mechanical features. The two cylinders are cast separately and mounted in V shape, with only a slight inclination from the vertical, on an aluminum crankcase. The cylinder bore is the maximum of 80 millimeters, 3.1 inches, and stroke is 11 inches. This gives a ratio of $3\frac{1}{2}$ to 1, stroke to bore. This motor, which has been designed by the firm's chief engineer, M. Michaud, differs considerably from the previous racing models produced for the firm. There are

three valves per cylinder, the intake being mounted vertically in the head of the cylinder, having a diameter of 2.4 inches and a flat seat, whereas the two exhausts are carried horizontally, one stem projecting towards the radiator and the other towards the dash. The valve operation is secured primarily by a single vertical shaft worked off the enclosed timing gears, and a transverse camshaft carried between the two cylinders. Each cylinder has its own carbureter, a Claudel, projecting through the sides of the bonnet, specially cut away for this purpose. There also is a separate high-tension magneto for each of the cylinders, the two machines being carried side by side at the front of the motor. Lubrication is under pressure, the water circulation is by pump through a plain tube copper radiator, V-shaped. The bonnet is extraordinarily high, but has very little width. The gasoline tank is carried on the floor boards behind the motor and in front of the mechanic. This car has a four-speed gearset with gate change, and final drive by side chains. Wire wheels with 810 by 90 tires were employed, but the wheels were not of the demountable type, a fact which doubtless cost Goux first place, for he punctured in all five times, and on one occasion had to pump up by hand. The total weight of the car is about 1,650 pounds. The motor develops 38 horsepower at 3,000 revolutions a minute.

The second Lion-Peugeot, driven by Boillot, has four cylinders in a V forming a single casting, their dimensions being 2.5 inches bore by 10.2 inches stroke; this is a ratio of 4 to 1, the highest employed for any motor yet produced in Europe. Theoretically, this motor ought to have won the race, for it developed 45 horsepower on the bench and undoubtedly was the fastest on the straightaway. Boillot lost a certain amount of time through the breakage of his gasoline feed pipe and the disarrangement of his foot brake, but the



TWO VIEWS OF THE FOUR-CYLINDER DE BAZELAIRE

real cause of his defeat was overheating. The exact cause of this is not known except to the engineers of the firm, but it doubtless can be traced to the inefficient cooling of the exhaust valve chambers. The car showed extraordinary speed; it was wonderfully flexible, and despite the defect mentioned there never was any mechanical breakage on the road. The number of revolutions is given at about 3,000 to 3,500 a minute, and it has been ascertained on good authority that the lineal piston speed is from 4,250 to 4,900 feet a minute. The Peugeot people made the mistake of putting this car in the race without sufficient testing; it only had previously been tried in short distance races, where the overheating did not reveal itself.

The Corre-Licorne car equipped with the new de Dion-Bouton single-cylinder motor of 100 by 300 millimeters, bore and stroke, practically 4 by 11.8 inches, proved a dis-

appointment. It only was slightly faster than last year's model with the same bore and a stroke of 10 inches. It ran with remarkable regularity, but was lacking the life which characterized the Hispano and the Lion-Peugeots. Last year the de Dion people superimposed the valves, making their diameter about three-quarters that of the cylinder diameter. This year they adopted two intakes and two exhausts carried in outstanding ports and operated from below. At the forward end of the motor there are two pairs of valve tappets, one of each operating directly an intake and an exhaust valve stem, whereas the second pair operates the rearmost pair of valves through a horizontal shaft, mounted near the base of the cylinder and parallel with the crankshaft. A single carbureter supplies the mixtures to the two intake ports, the charge being simultaneously fired by two spark plugs, one over each intake valve, the current being

furnished by a single high-tension magneto. On the opposite or left-hand side of the motor are two independent exhaust pipes. Water circulation is by pump and lubrication under pressure, pure castor oil being used, as on all these racing motors.

The four-cylinder Tribets never had a chance to show what they were worth, yet they presented interesting features. In both models the cylinders were cast in two pairs, the bore being the maximum of 2.5 inches and the stroke 7.08 inches. The hemispherical type of combustion chamber is employed, with valves inclined in the head and operated by vertical push rods and rocker arms on each side. The motor develops 35 horsepower at 2,000 revolutions a minute. Steel pistons are used; the crankshaft is carried on three plain bearings; spark plugs are mounted in the cylinder heads, and current is supplied from a high-tension magneto. The total weight of the car is 1,760 pounds.

De Bazelaire ran with practically a standard runabout tuned up for racing. He had the shortest-stroke motor in the race, the dimension being only 6.2 inches.

MOTORIST'S BOOKMAN

PEOPLE travel abroad for reasons that differ, but the most indifferent is made happy by being able to appreciate the pictures that the world talks about. To go to Europe without seeing pictures is like seeing Hamlet with hamlet left out. A most readable book to take in one's steamer trunk is "What Pictures to See in Europe in One Summer," by Lorinda Munson Bryant, who warns the tourist against trying to see too much in a short time, and especially against making the trip intellectually unprepared for viewing galleries. She calls particular attention to some of the many masterpieces of art to be found in the galleries of London, Paris, Rome, Florence, Venice, Berlin and Amsterdam. A brief sketch of each picture is given, and of the artist, with plenty of anecdotes and stories about the artists, which enlivens the book and saves it from being historically dry even to the mildest of art lovers, and making it even a pleasant book for the summer vacation, where'er that may be. Published by John Lane Co., New York.

Manufacturing Armatures

"Practical Armature and Magnet Winding," by Henry C. Horstman and Victor H. Tousley, is a simple treatise dealing with the principles and shop practice of armature and magnet work. The ten chapters are devoted to the elements of armature design, mechanical considerations, armature windings, commutator construction, armature troubles, armature calculations, and magnet winding. The concluding chapter consists of tables and formulæ. The book, profusely illustrated with wiring diagrams, is a 232-page, limp-leather covered volume published by Frederick J. Drake & Co., Chicago.

His motor develops 30 horsepower at 2,400 revolutions a minute. With this comparatively low power it was impossible for him to expect to compete with the specially-prepared racers, and he was quite satisfied to give a regularity display.

The remarks on the de Bazelaire also apply to the English Calthorpe cars, the four-cylinder motors of which have a stroke of 6.6 inches for the maximum bore of 2.5 inches. It never was expected that they would win the race, but this opportunity was taken of testing them to the utmost. To outsiders the cars are interesting as revealing the tendency of European contractors, these models being the forerunners of the 1911 series that is about to come out.

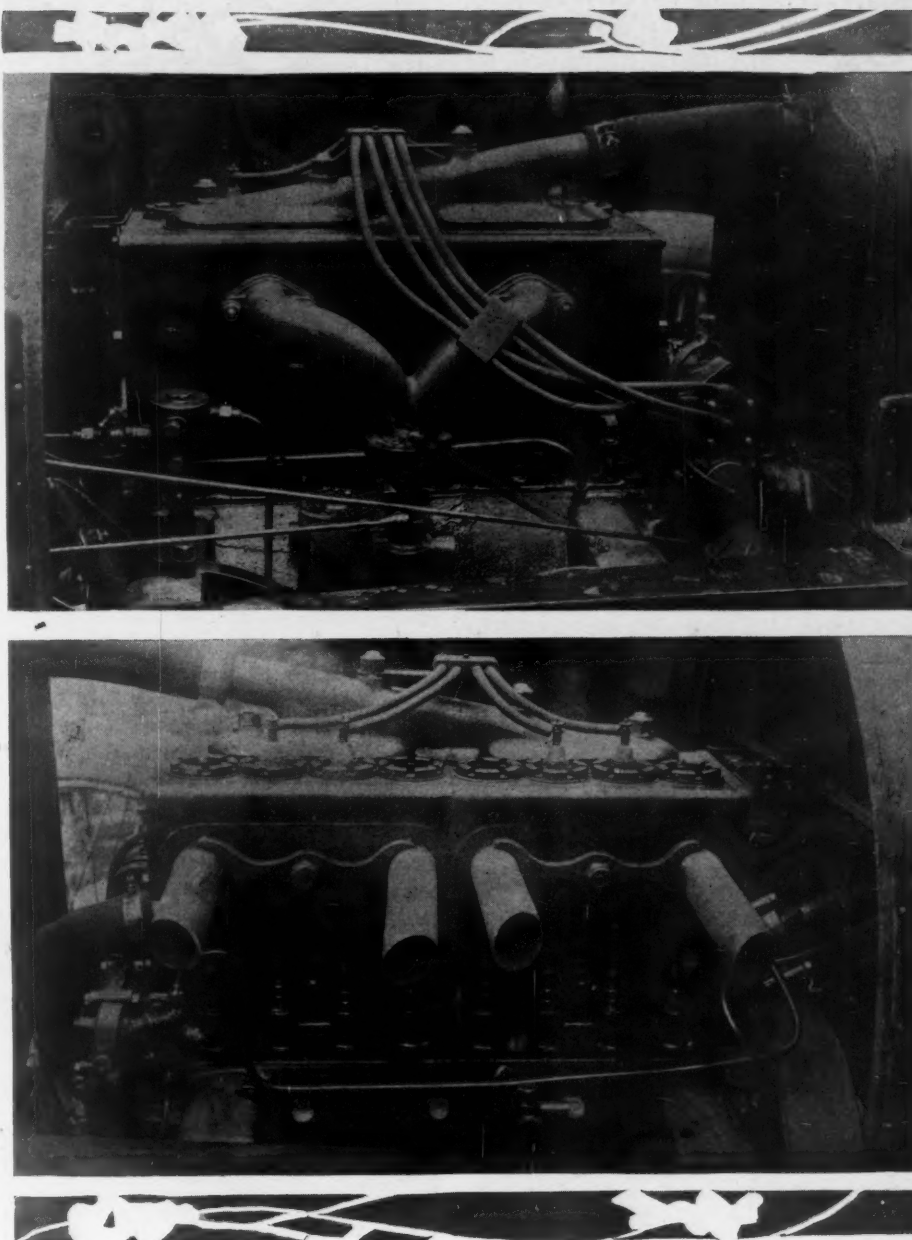
The weight of the small cars varied from 1,320 to 1,760 pounds, without gasoline and oil. The greatest wheelbase was 102 inches, on the Calthorpes, although the majority of the cars did not exceed 100 inches, and a few were as low as 90 inches. In all cases the tires were 810 by 90, most of them being mounted on Rudge-Whitworth demountable wire wheels.

MOTORIST'S BOOKMAN

In a 253-page volume, entitled "The Gas Turbine," Henry Harrison Suplee has collected the most important papers on the history and theory of the gas turbine by eminent English, French, German, and American engineers, also the transactions of technical societies, and which he has supplemented with information founded on actual experiments. It is an engineer's volume from start to finish. The history of the turbine is taken up. Chapter 11 is a scientific investigation into the possibilities of gas turbines by R. N. Neilson in which efficiency curves, pressure-volume curves, heat-absorption equations and various diagrams on pressure-volume and entropy-temperature charts are given. A very careful analysis of the cycles in the turbine is gone into. Following this is an extended discussion by members of the civil engineers of France. The book is one of the ablest treatises on the subject yet brought out. It is published by J. B. Lipincott Co., Philadelphia.

The Dynamo and Motor

"Dynamos and Motors," by William S. Franklin and William Esty, is a treatise on dynamo electric machinery. In the introduction, part I, the electric current, the dynamo and the transformer, direct and alternating current measurements, are dealt with; part II discusses, under the subhead of direct-current generators and motors, the operation of a direct-current dynamo as a generator, the operation of a direct-current dynamo as a motor, and power losses and efficiencies; part III takes up the subject of harmonic electromotive forces and currents, and the poly-phase system; the synchronous motor and converter, the induction motor and the single-phase series motor are considered in



TWO VIEWS OF THE ENGLISH CALTHORPE

part IV; and the remainder of the book is devoted to station arrangement and operation, switchboards and their appliances, and the practical operation of dynamos. It is a 490-page volume and is published by the Macmillan Co., New York. It is a good textbook for those in the work and one that will be appreciated by the students of electricity.

"Elements of Machine Design" is a 446-page treatise dealing with the fundamental principles of machine design. The aim of the authors, Dexter S. Kimball and John H. Barr, has been to bring out the salient features of the subject as a preparatory and basis for more advanced college work, the book being the result of the experience of the authors in teaching machine design at Cornell university. Chapters I, II and III deals with the fundamental principles of design, discussing typical energy and force problems, and the straining actions with formulæ. Lubrication and efficiency is dealt with in

Chapter IV, and the remainder of the book devoted to the discussion of machine details, such as springs, riveted fastenings, screws and screw fastenings, tubes, pipes, flues, toothed gearing, constraining surfaces, journals, bearings, etc., showing how the theory discussed in the first part of the book is applied in practice. The book is published by John Wiley & Son, New York.

"Motors and Motoring," by Henry J. Spooner, in its fourth edition, which has been revised and re-written, aims to assist the beginner in gaining practical information on the principles of construction and operation of a motor car. The author has endeavored in a simple and non-technical manner to describe the mechanism of a car, so that the student can easily grasp the general arrangement and working of a car and the methods of adjustment and lubrication. It is a 276-page book published to T. C. & E. C. Jack, London, and is an interesting volume.

ACETYLENE GAS VS. COPPER

CHICAGO—Editor Motor Age—Will Motor Age inform me what is the exact chemical action when acetylene gas is brought in contact with copper piping? I am aware of the danger connected with it, but desire to know the exact details relative to the chemical action.—Reader.

Absolutely dry and pure acetylene gas has no action on dry, pure copper. This is a combination which is impossible in ordinary practice. Copper tubing is seldom if ever absolutely clean and dry. Acetylene may be and is manufactured dry and commercially clean, but there is always a possibility of its getting some moisture in the tube, or getting into a tube which is already unclean. Most and impure acetylene, when coming in contact with copper, readily forms a compound known as copper acetalide. The formula for this varies somewhat, depending upon the conditions of formation, but is generally accepted as $C_2H_2Cu_2O$. Copper acetalide detonates by application of heat or shock. Experiments have been made with brass by the Prest-O-Lite company—a case has never been found where copper acetalide was formed with brass under commercial conditions. In using acetylene rubber or brass tubing is recommended, and certain manufacturers claim they do everything they can to prevent the use of copper tubing.

ROTARY VALVE DESIGN

East Moline, Ill.—Editor Motor Age—The illustration represents a four-cycle gasoline engine especially adapted for motor cars. Referring to Fig. 1, B is a rotating valve which serves both for the exhaust and the intake. This valve is driven by a set of four bevel gears to rotate at camshaft speed. Its port opening through a cross section should be one-eighth of the circumference of the valve. The long way is left for considerable choice. In the position shown in the lower part of the illustration the exhaust takes place. On the down stroke the intake takes place.

The upper part of the illustration shows how the cylinders can be designed in pairs. C is a light spring to hold the rotating valve in a gas-tight position; E is an oil tube for lubricating the rotating valve; and F is an auxiliary exhaust valve.

The advantages of this engine are that the opening and closing of the ports is positive; that it is quite simple; and that it runs noiselessly. The auxiliary valve F is opened by an oval cam, and the spring that holds it down only needs to be light. The engine can be run at high speed without the valves jumping off the cam.

The efficiency as compared with a poppet-valve engine is increased in several ways. It can be designed with large ports and compact combustion chamber. A compact combustion chamber allows the combustion of the gases to be more rapid and presents a small cooling surface to the

The Readers'

burnt gases. On the poppet-valve engine the camshaft having to lift the valves with heavy springs and open them against pressure absorbs considerable power. On this rotary-valve engine it takes very little power to open the auxiliary exhaust valve as it only needs a weak spring and is opened by an oval cam. The auxiliary exhaust valve is to be opened at the end of the exhaust stroke and closed at the end of the intake. The position at intermediate points is unimportant. The engine being more efficient than one with poppet valves can therefore be designed lighter and smaller for a given horsepower.

The idea of a rotary valve is an old one and does not work unless we have a metal which does not expand from heat. Nickel steel, containing 35 per cent nickel, expands inappreciable from heat. The rotary valve must be made from nickel steel or other metal which changes its size equally little from heat. The auxiliary valve serves the purpose of letting out the largest portion of the hot gases, and at the same time thereby reducing the temperature of the gases remaining in the cylinders, which have to pass through the rotary valve. On half charge, that is when the intake is throttled so the cylinder fills only one-half with explosive gas, over one-half of the exhaust gases go out of the auxiliary valve. The auxiliary valve releasing the pressure of the remaining gas in the cylinder reduces its temperature over one-third. Without the auxiliary

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

valve the rotary valve would hardly open fast enough to let the exhaust gases out. The object of using an auxiliary valve and a rotary valve through which both intake and exhaust pass is to prevent the rotary from overheating and to prevent carbon deposits on it. Objectionable features of the rotary valves are carbon deposits on it and pressure on the valve when the explosion takes place. The rotary valve must have sufficient taper so it will not stick or bind. This taper is an objection in that there is unequal expansion. But if the rotary valve is made of nickel steel and is kept covered with a film of oil it ought to remain gas tight. Being tapered it can be reground.—Peter Schulte.

MUST BE BOLTED-ON TIRE

Covington, Ky.—Editor Motor Age—My car at present is equipped with Fisk demountable rims. As no doubt you know with this rim you can only use the Fisk and Diamond bolted-on tires, I wish Motor Age would kindly suggest to me some way I can change to a Q. D. or clincher rim and still retain the Fisk demountable features, as I desire more varied choice of tires.—Wm. P. Duffy.

There is not any such possibility as you desire. The Fisk Rubber Co. holds basic patents which will prohibit you from using its demountable rim without using bolted-on tires. If you used clincher or Dunlop tires with such rims you would be infringing on Fisk patents and subject to prosecution.

BREAKER-BOX POSITION

White Sulphur Springs, Mont.—Editor Motor Age—Will Motor Age kindly answer the following questions in the Readers' Clearing House columns: I have a model H. Franklin 1910 car which has a Bosch magneto. Should the break in the timer take place as the brush hits the contact plate, or should it occur about the time the brush is in the center of the plate?

The left bearing on my differential broke, and in taking it out two washers—one plain and one with balls set in it—fell out. Kindly let me know how to assemble it, when I receive new parts.—H. W. Spencer.

It does not make any difference when the break occurs provided it does occur while the distributor brush is in contact with the segment.

What you speak of is the thrust bearing and is made up of two steel washers and



FIG. 2—IDEAL WINTER CAP

Clearing House

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

a race of balls carried in a retainer, which race is held between the steel washers. You will not have any trouble in assembling these parts because the bearing is located at the left side of the differential, and is between the differential and the housing. The use of this bearing is to keep the large bevel gear of the differential in mesh with the bevel pinion on the rear end of the propeller shaft. You will understand that when the bevel pinion is driving the bevel gear, there is a tendency to push the bevel gear away from it, and this bearing is used to absorb such stress.

LIGHTS ON FORD CAR

Houston, Tex.—Editor Motor Age—As many readers seem interested in electric lights for Ford model T cars, possibly my experience may help. The machine tested slightly over $2\frac{1}{2}$ amperes when firing on the magneto at ordinary speed with two 6-volt, 1-ampere tungsten lights in series between the magneto connection on the dash and the engine ground. As one ampere lamp did not give satisfactory illumination with the reflectors I had, they were replaced with 6-volt, 16-candlepower lamps, of which I only use one at a time. This, however, gives much better illumination than carbide lamps in their average state of contrariness, is dependable, varies but little with speed and should cost practically nothing to run. Have used it nearly a month with no trouble whatever.

The K-W Ignition Co. makes silvered parabolic reflectors to convert gas lamps into electrics at about \$4.60 each, including 15-candlepower bulb. One dollar more for wire and cut-out switch completes the expense bill and half an hour's work will put it in working order. This is so much more satisfactory than the old blow-in-the-can, blow-out-the-tubes, clean-out-the-water drips process, that I feel sure it will save some of the readers much.—N. M. E.

LONG-STROKE MOTOR FACTS

Houston, Tex.—Editor Motor Age—Will Motor Age kindly answer the following questions for a constant reader:

1—Approximately what per cent of the present motor car output depends on the splash system only for lubrication of all bearings on the crankshaft and pistons?

2—Is there any patent on the system of lubrication which makes use of a drilled crankshaft to lead oil from the main bearings to the connecting rod bearings?

3—Has an original English patent regis-

tered in the United States any better chance of protection here than a patent originally granted in the United States?

4—Are there any motors of the long-stroke type as described in the Motor Age report of the Voiturette cup race now made in America?

5—What is their relative fuel economy and power at ordinary speeds, as compared to the short-stroke motor?

6—Do they not require especially large sized valve openings?—N. M. E.

1—Fully 90 per cent of the motors depend on the splash for crankshaft and piston lubrication.

2—There is no patent on boring the crankshaft in order to lubricate the lower connecting rod bearings.

3—The registered English patent possesses equal protection with any originally-granted American patent.

4—There are not any American motors with the long-stroke such as described in the Voiturette cup race at present built in America.

5—There is a higher efficiency with the long-stroke motor, but exact data on this is not at hand at present. It is expected that as soon as the long-stroke motor receives more attention in America that valuable data and the relative efficiency of it as compared with the short-stroke motor will be obtained.

6—Specially large valves have been used

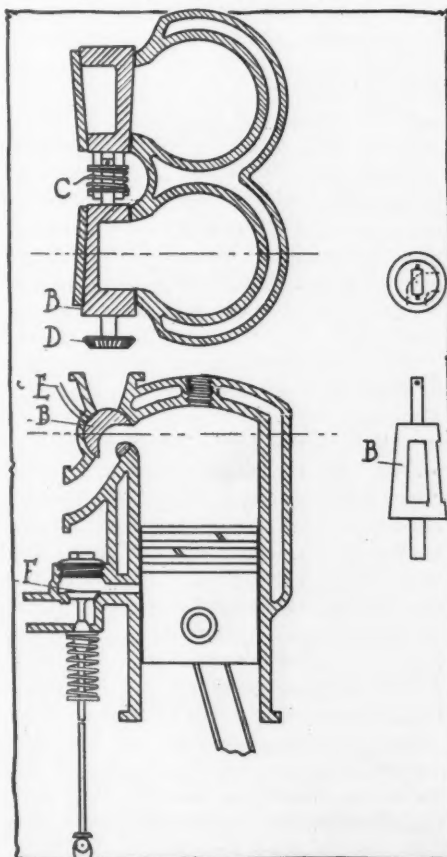


FIG. 1—A ROTARY VALVE DESIGN

on all the long-stroke motors, built in Europe. In some cases the valve diameter has reached half the piston diameter. These large diameter valves have been used to insure a full mixture which is very necessary in high-speed work. The introduction of the large-diameter valve in long-stroke motors has had a direct effect by way of increasing the valve diameters in short-stroke motors. It is no more necessary to have a large diameter valve in a long-stroke than in a short-stroke motor, if high efficiency is not required in either.

IDEAL WINTER CAP

Minden, Nebr.—Editor Motor Age—I am sending herewith a photograph, Fig. 2, showing my fur suit for winter traveling in my motor car. The principal idea is the cap which is a loose-fitting beaver fur cap pulled down over the face completely with two holes cut in it for the eyes. Over these holes goggles are used if necessary. This cap protects the cheeks, nose and forehead completely. I have used this outfit for 4 years and have never been cold. I have driven cars many thousands of miles in winter and find it the best ever as a protection.—Dr. Charles E. Abbott.

CHANGING THE POWER PLANT

Crawfordsville, Ind.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions:

1—Would it be possible and practical to install a gasoline engine in an old White steamer?

2—What changes would be necessary and what would be the cost of the material outside of the work?

3—What horsepower engine would be necessary?—X.

1—It would not be practical to do as you suggest, because you would have to rebuild the frame of the car and use a new rear axle. You would have to install a new radiator, so that practically the front axle, the springs and body would be all that you could retain.

2—You would have to build a new frame on which you could satisfactorily mount your motor and gearset. The cost of this could only be obtained from frame manufacturers.

3—It would be desirable to put in a four-cylinder motor with bore not less than 5 inches.

SOME DRY CELL ARRANGEMENTS

Erie, Pa.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, kindly answer the following questions:

1—If eight dry cells with a voltage of $1\frac{1}{2}$ each and an amperage of 25 each were connected in multiple-series, what would be the voltage and amperage of the battery?

2—Would it be more economical to run a four-cylinder engine with the eight dry cells arranged in multiple than to run it with six cells in series, figuring 25 cents as the cost of each dry cell?

3—What is the meaning of the initials



FIG. 3—A STRETCH OF THE RIVER-TO-RIVER ROAD NEAR GUTHRIE CENTER, IA. THIS ROAD IS DRAGGED BY THE FARMERS WITH KING DRAGS AFTER EVERY RAIN

S. P. O. in the list of racing cars in the Vanderbilt race published in *Motor Age*, issue September 29?—Multiple.

1—It would depend on the multiple-series arrangement you desired. If the eight cells were arranged in two groups of four cells each in series, and the two groups connected in multiple, then the total voltage would be six and the amperage 50. On the other hand, had you the cells in four groups of two each in series and connected the four groups in multiple, your total voltage would be three and your amperage 100. Were the eight cells in series, your voltage would be 12, and your amperage 25.

2—You would not have sufficient voltage if you ran the eight in multiple, because then your total voltage would be $1\frac{1}{2}$, and your amperage 200. If you ran the six in series your voltage would be 9. It is impossible to answer your question because the multiple arrangement is impossible, and only the series remain of the choice.

3—The letters S. P. O. are initials of the company's name, which is Society Petit Outillage.

THE THIRD CYLINDER MISSES

Anaconda, Mont.—Editor *Motor Age*—In *Motor Age*, September 22 issue, appeared an inquiry from a party in Centralia, Wash., relative to his third cylinder missing. I would suggest that our Washington friend place a piece of common writing paper between the valve stem and the valve lifter, turn the motor over to the firing point on the third cylinder, then try to remove the paper. Should the paper tear in removing, cut off the valve stem until you can remove the paper without tearing. After grinding the valves great care should be taken to see that the valves have proper clearance.—Robert Gedye.

MANIPULATING THE SPARK

Ozark, Ala.—Editor *Motor Age*—I have noticed several articles in *Motor Age* recently in answer to inquiries from different persons in regard to the proper management of the spark on hard pulls, and the

advice always has been to retard the spark. I always have heard there were exceptions to all general rules. My motor seems to be one of the exceptions. It is an air-cooled, 5 by 5 motor, on an I. H. C. motor buggy. If I retard the spark on very hard pulls, up steep hills or through deep sandbeds, the motor slows down until it begins to knock, whereas if I advance the spark the motor picks up readily and the machine goes up the steepest hills—even 40 per cent grades—and through the deepest sandbeds in a gallop. I have tried the advice of *Motor Age* several times and have invariably had to advance the spark to make any headway. This always with the throttle wide open. Will *Motor Age* please give me the names of all the motor car manufacturers who use air-cooled motors, and their addresses, besides the Franklin, I. H. C. and Middleby.—Dr. B. F. Coleman.

What you say in regard to the action of your motor when the spark is retarded is quite characteristic of all two-cylinder motors and would be even more pronounced in a one-cylinder engine; this is due to their less constant torque. With any engine, however, more power can be obtained at slow speeds with a slightly retarded spark than with the spark advanced, and perhaps a greater range of spark control is possible on a four or six-cylinder motor. You apparently have misinterpreted the meaning of the terms advanced and retarded. By an advanced spark is meant a spark which occurs before the piston has reached the top center on the compression stroke, and a retarded spark is one that takes place in the cylinder after the piston has started to descend on the explosion stroke. The rule that the spark-control lever should be advanced as far as possible without producing a knock in the motor is a pretty good rule to follow.

The following concerns use air-cooled motors: Cameron Car Co., Beverly, Mass.; Metz Co., Waltham, Mass.; Black Mfg. Co., Chicago, Ill.; Jewel Carriage Co., Car-

thage, Ohio; Chase Motor Truck Co., Syracuse, N. Y.; W. H. McIntyre Co., Auburn, Ind.; Adams Co., Dubuque, Ia.; Wayne Works, Richmond, Ind.; Victor Automobile Co., Ridgeville, Ind.; Sears Motor Car Works, Chicago, Ill.; Ranger Automobile Co., Chicago, Ill.; Zimmerman Mfg. Co., Auburn, Ind.; Chas. E. Duryea, Reading, Pa.; Champion Wagon Co., Owego, N. Y.; Kelly Motor Truck Co., Springfield, Ohio; Sternberg Mfg. Co., Milwaukee, Wis.

SAL SODA WAS INTENDED

Gibson City, Ill.—Editor *Motor Age*—In *Motor Age*, issue September 8, 1910, it was recommended that a solution of 2 pounds of crystals of soda to a gallon of water be used for the purpose of removing lime sediment from radiators. I am at a loss to know what compound of soda you mean. My opinion is that you refer to what is known as sal soda—carbonate of soda. Am I right, and if so will that solution injure the rubber connection hose?—F. B. Lovell.

You are correct in assuming that it is sal soda, or common washing soda, which was intended. This will not injure the rubber hose connections if they are thoroughly washed out.

REPAIRING NOISY RADIUS RODS

Madison, S. Dak.—Editor *Motor Age*—What can be done to cure rattling or loose radius rods in the E-M-F? Shortening or lengthening does not help.—E. M. F.

The easiest and most practical way of stopping the rattling of your radius rod is to fit new bolts in all the connections. If the holes in the lugs on the frame and rear-axle and in the yokes of the rods as well as the bolts are worn, it would be best to first ream out the holes and then fit bolts of a larger size. To eliminate the noise, the connections must be tight; that is, the joints should be freely flexible, but there should be no lost motion.

1908 VANDERBILT CUP SPEED

Niagara Falls, N. Y.—Editor *Motor Age*—Through the Readers' Clearing House will *Motor Age* kindly answer the following questions: What was the average speed of George Robertson in the Vanderbilt race and what was the year?—A Subscriber's Son.

In the 1908 Vanderbilt George Robertson's average speed was 64.3 miles per hour.

SELDEN PATENT INFORMATION

Columbia City, Ind.—Editor *Motor Age*—Please answer through the Readers' Clearing House the following questions:

1—Is the Selden patent where the power is transmitted from the motor to the rear axle by means of a clutch? If so, why are not all cars having this arrangement licensed under the Selden patent?

2—Is James Florida, driver of the Locomobile No. 1 in the 1908 Vanderbilt race, still driving on the track?

3—What is the largest gasoline motor in the world and the size of it? What has



the largest number of cylinders?—Robin A. Strong.

1—All cars are not licensed cars because some of the manufacturers have refused to join the Association Licensed Automobile Manufacturers, and others who wanted to join have been refused admission by the A. L. A. M. At present, and for 5 or 6 years, the A. L. A. M. has been suing the Ford company and others and this matter is still in the courts, so that the A. L. A. M., on the one hand, has not pushed the independent manufacturer because of his not having joined the association. The A. L. A. M. has several suits pending against independents at the present time.

2—James Florida is now superintendent of the Philadelphia branch of the Locomobile company, and has not driven in road races since the Crown Point meet in 1909.

3—Motor Age does not know of the largest gasoline motor in the world. There have been motors manufactured with 32 cylinders, these have been used for motor boat work. The greatest number of cylinders used in a motor car, so far as known, is twelve. In aeroplane work fourteen cylinder motors are common.

AN ALTUS—INDIANAPOLIS ROUTE

Altus, Okla.—Editor Motor Age—Will Motor Age kindly publish a route from Altus, Okla., to Indianapolis, Ind., going through Danville, Ill., and oblige.—Roy Adams.

From Altus go to Oklahoma City, thence take the route covered by the Glidden tourists during the past summer to Chicago, which is as follows: From Oklahoma City pass through Britton, Edmond, Guthrie, Mulhall, Orlando, Enid, Kremlin, Pond Creek, Medford, Renfrow, Okla.; passing into the state of Kansas the route lies through Caldwell, Drury, Wellington, Riverdale, Peck, Wichita, Newton, Elbing, Peabody, Florence, Clements, Elinor, Emporia, Lebo, Waverly, Silkville, Williamsburg, Ottawa, Wellsville, Gardner, Bonita, Olathe, Pleasant View, Shawnee, Rosedale, Kansas City, White Church, Piper, Lansing, Leavenworth, Lowemont, Atchison; thence into Missouri, passing through Rushville, Halls, St. Joseph, Savannah, Maryville, Wilcox, Burlington Junction, Tarkio; thence into Iowa via Shenandoah, Randolph, Tabor and Glenwood to Council Bluffs; from Council Bluffs across the state of Iowa to Davenport, following the famous river-to-river road going through Weston, Underwood, Minden, Avoca, Walnut, Marne, Atlantic, Lorah, Brayton, Exira, North Branch, Guthrie Center, Monteith, Dale, Redfield, Adel, Wauke, Des Moines, Altoona, Mitchellville, Colfax, Newton, Kellogg, Grinnell, Brooklyn, Ladora, Marengo, Blainstown, VanHorn, Newhall, Atkins, Cedar Rapids, Western, Curtis, North Liberty, Iowa City, Atalissa, Moscow, Durant to Davenport; thence across Illinois to Chicago through Rock Island, Moline, Watertown, Hampton, Rapid City, Port Byron, Cordova, Albany,



Morrison, Emerson, Sterling, Dixon, Franklin Grove, Ashton, Flagg, Rochelle, Creston, Malta, De Kalb, Maple Park, Geneva, Lombard, Maywood, Austin and Chicago. From Chicago to Danville, travel by way of Moline, St. Anne, Watseka, Milford, Wellington, Hoopeston, Rossville to Danville, then on to Indianapolis, Ind., through Cayuga, Newport, Clinton, Terre Haute, Seelyville, Staunton, Turner, Brazil, Harmony, Reelsville, Manhattan, Mt. Meridian, Stilesville, Belleville, Plainfield, Bridgeport to Indianapolis.

A MUNCIE-DENVER ROUTE

Muncie, Ind.—Editor Motor Age—In planning an overland trip from Muncie, Ind., to Denver, Colo., I have been informed that the best route is via the river-to-river road from Davenport to Omaha. I desire to make the trip in daily runs of 100 to 125 miles, making good stopping towns over night. The route from Muncie to La Fayette, Ind., is familiar, but from La Fayette to Davenport and Omaha to Denver, I should like to know the best route for such a trip.—Harry Yeo.

A good route, as laid out by the Official Automobile Blue Book from La Fayette to Omaha via Chicago, is as follows: La Fayette, Montmorenci, Wolcott, Remington, Rensselaer, Thayer, Crown Point, Hammond, South Chicago, Chicago. From this point west the route lies through Lombard, Geneva, DeKalb, Creston, Rochelle, Ashton, Franklin Grove, Dixon, Sterling, Morrison, Fulton, Lyons, Clinton, Dewitt, Grand Mound, Wheatland, Lowden, Clarence, Mechanicsville, Lisbon, Mt. Vernon, Cedar Rapids, Belle Plaine, Chelsea, Tama, Montour, Butlerville, Marshalltown, Ames, Boone, Ogden, Grand Junction, Jefferson, Glidden, Carroll, West Side, Denison, Dunlap, Logan, Crescent, Council Bluffs, Omaha.

From Omaha to Denver Motor Age suggests that you follow the route of the Glidden tourists of 1909, passing through Waterloo, Fremont, Ames, Rogers, Schuyler, Columbus, Duncan, Silver Creek, Clarks, Central City, Grand Island, Wood River, Shelton, Buda, Kearney, Odessa, Elm Creek, Lexington, Cozard, Gothenburg, North Platte, Paxton, Brule, Julesburg, Sedgwick, Crook, Powell, Ford, Sterling, Merino, Brush, Fort Morgan, Bennett, Watkins, Sable, to Denver.

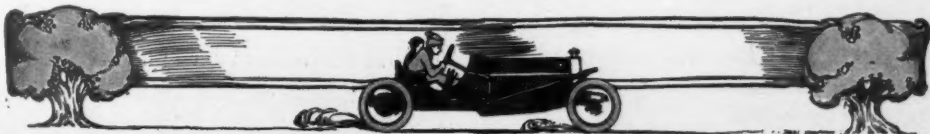
Should you prefer the river-to-river route from Davenport to Council Bluffs, leave Clinton, Ia., via Camache, LaFollette, Princeton, LeClaire, Pleasant Valley to

Davenport, where you will strike the river-to-river road, going through Durant, Wilton, West Liberty, Iowa City, Curtis, Cedar Rapids, Newhall, VanHorn, Marengo, Ladora, Brooklyn, Grinnell, Newton, Mitchellville, Des Moines, Wauke, Dale, Guthrie Center, Brayton, Atlantic, Marne, Avoca, Underwood, Weston, Council Bluffs.

IRONTON-CHATTANOOGA ROUTE

Wellston, Ohio—Editor Motor Age—Please advise me through the Reader's Clearing House as to the best route from Ironton, Ohio, to Chattanooga, Tenn., giving road conditions if possible.—Mrs. C. R. Franklin.

As there is no official route from Ironton to Chillicothe Motor Age would suggest your writing to the secretary of the Automobile Club of Cincinnati, who may be able to furnish you with that part of the route. Leaving Chillicothe on the way to Cincinnati, the towns passed through are Bourneville, Bainbridge, Rainsboro, New Boston, Hillsboro, Salem, Dodsonville, Springton, Fayetteville, Marathon, Boston, Milford, Madisonville and Oakley. The roads this far are practically gravel and stone all the way. From Cincinnati follow the road as laid out by the White Route Book, pass through Covington, where a short climb on a wide slippery road—very bad in wet weather—will be encountered. Out of Covington, after traveling over a toll road about 24 miles, you will find numerous sharp turns in the road over a hilly and lonesome country, passing through Crittenden, Dry Ridge, Williamstown and Corinth to Georgetown. Continuing on to Lexington and Frankfort over fine roadways, which are partly macadam, you will land in Louisville by way of Shelbyville and Middletown. From Louisville for about 40 miles, taking in Mount Washington and Bardstown, the roads are reasonably good, but gradually grow poor from there on to New Haven, Athertonville, Buffalo, Magnolia, Canmer, Uno, Bear Wallow, Cave City and Glasgow Junction, encountering on the way stretches of sand, mud, rock and water. From Glasgow Junction into Bowling Green is an easy drive, as also is the trip on through Franklin and Goodlettsville to Nashville, which is over a fine pike road. Following on to Chattanooga, a distance of 247 miles, pass through Levern, Murfreesboro, Fayetteville, Meridianville, Huntsville, Mayfield, Gurley, Paint Rock, Woodville, Parkinsville, Scottsboro, Fackler, Bridgeport, South Pittsburg and Jasper. You will be obliged to pay a number of tolls in this part of the country. A great many different kinds of bad roads will be found on the last leg of this trip interspersed with occasional stretches of fine pike.



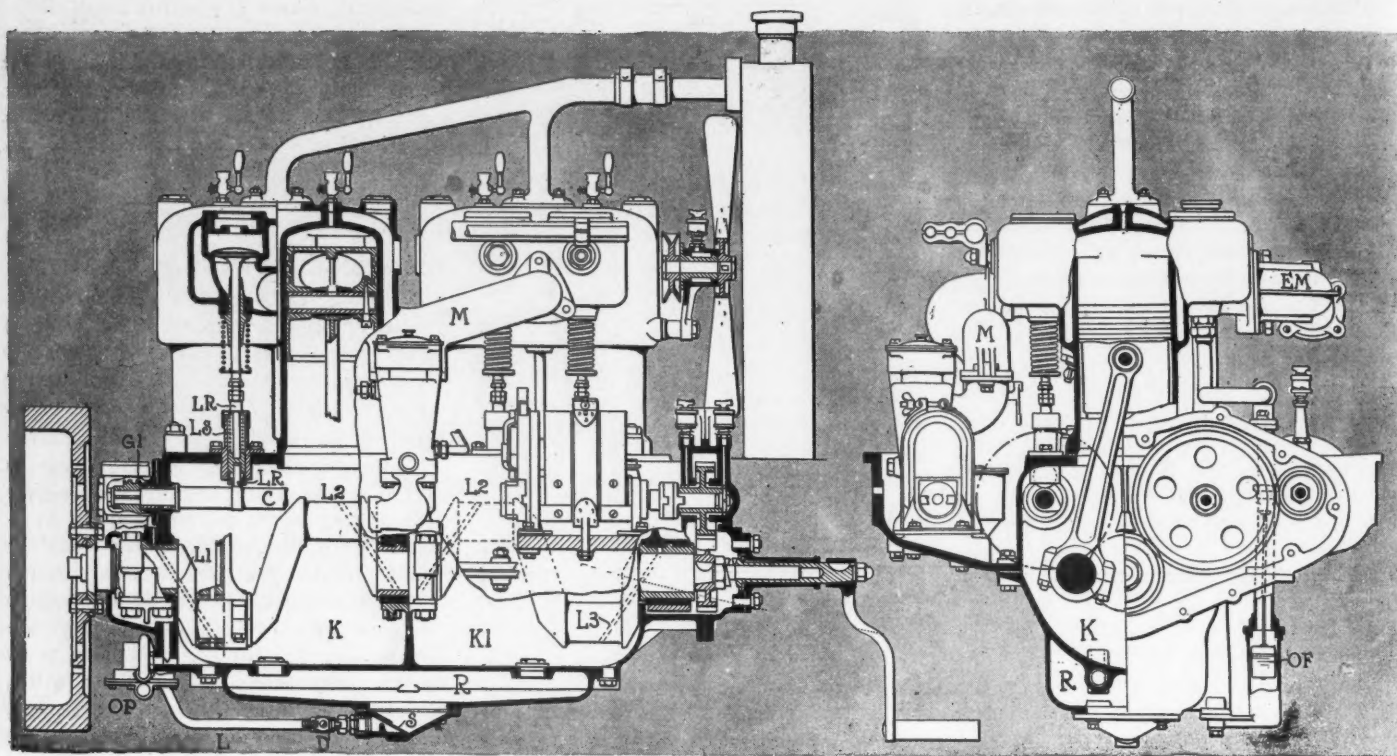


FIG. 1—VERTICAL SIDE AND END SECTIONS OF ALCO 1911 FOUR-CYLINDER CAR

A UNIQUE honor has been achieved by the American Locomotive Co. by its six-cylinder Alco winning the Vanderbilt cup race twice in succession. Never before in the history of American road racing has this father of the American road race trophies been won by the same driver with the same car, the car driven by Grant being the one with which he won the cup last year, excepting for different spark plugs, wires, and a new clutch. The winning of a big race twice in succession by the same car presents forcibly the question of fixedness of design in contrast to those concerns which revolutionize their models from year to year. Continuing a model with but few changes from year to year is commendable practice, providing that model is up to date, which means that when it originally attained its present form it must have been somewhat in advance of the time. Grant's Alco, which won the Vanderbilt, was not a 1911 model, although practically the same excepting in that it was a chain-drive chassis.

The 1911 Alco line is made of two models only, a six-cylinder chassis designated Six-60, and a four-cylinder designated Four-40. The six-cylinder car has been little changed for next year, excepting in that a new carbureter has been added, the compression relief lever has been placed beneath the radiator instead of on the dash, and the rear body seats have been made $1\frac{1}{2}$ inch wider. In the mounting of the motor an alteration noted is that the crankcase is now placed horizontally with the cylinders vertical, instead of with the crankcase tipping slightly to the rear, as heretofore.

The four-cylinder Alco has a larger

Alco Four and Six-Cylinder Types

motor, with $5\frac{1}{8}$ -inch bore and $5\frac{1}{2}$ -inch stroke. This year the cylinder sizes are $4\frac{3}{4}$ by $5\frac{1}{2}$, so that $\frac{3}{8}$ -inch has been added to the bore. Increasing the cylinder size has called for an increase in the valve diameter, which is now $2\frac{1}{4}$ inches. This motor is fitted with a new Alco carbureter and has the cooling system and water pump of increased capacity to take care of the increased cylinder sizes. On this motor the crankcase is mounted horizontally instead of tilting to the rear. The rear body seas are made $1\frac{1}{2}$ inch wider on all body lines, and like in the six-cylinder model, the compression relief has been placed beneath the radiator.

The Oiling System

Fig. 1 shows a vertical section of the Alco motor, in which many features are illustrated. In the matter of lubrication a circulating system is employed, with oil taken from the reservoir R through the wire screen S and the oil lead L to the pump OP, located externally on the crankcase at the rear. The pump is driven by vertical shaft from the gear G1 on the camshaft. From this pump the oil is delivered to the three bearings of the crank-

shaft. Once the oil has passed through these bearings it reaches the lower ends of the connecting rods by means of triangular ducts grooved in the crankshaft, as illustrated at L1, L2, and L3. The oil lead supplying the middle cylinder supplies the two lower connecting rod bearings for the second and third cylinders, whereas the oil lead to the rear crankshaft is called upon to furnish for the rear connecting rod only, and that to the front crankshaft bearing for the front connecting rod alone.

The crankcase has its two compartments K and K1, in which a splash level is maintained. At the rear end of the crankshaft is noted an oil ring to prevent the leakage of oil at this point. The details of the oil pump are shown in Fig. 3, the shaft for convenience being divided with the opposing ends united by the sleeve S. On the upper end of this shaft is the gear G, taking its drive from a corresponding gear G1 on the camshaft. The oil pump proper consists of but two pinions P1 and P2 constantly in mesh and forcing the oil out through the pump exit. The entrance and exit oil openings are marked

SPECIFICATIONS OF THE ALCO FOR THE SEASON OF 1911

SPECIFICATIONS OF ALCO SIX—60

Bore— $4\frac{3}{4}$ inches
Stroke— $5\frac{1}{2}$ inches
Ignition—Bosch dual system
Wheelbase—134 inches
Front springs— $35\frac{1}{2}$ by 2 inches
Rear springs—55 by $2\frac{1}{4}$ inches
Front tires—36 by 4 inches
Rear tires—36 by 5 inches

SPECIFICATIONS OF ALCO FOUR—40

Bore— $5\frac{1}{8}$ inches
Stroke— $5\frac{1}{2}$ inches
Ignition—Bosch dual system
Wheelbase—126 inches
Front springs— $35\frac{1}{2}$ by 2 inches
Rear springs—55 by $2\frac{1}{4}$ inches
Front tires—36 by 4 inches
Rear tires—36 by 5 inches

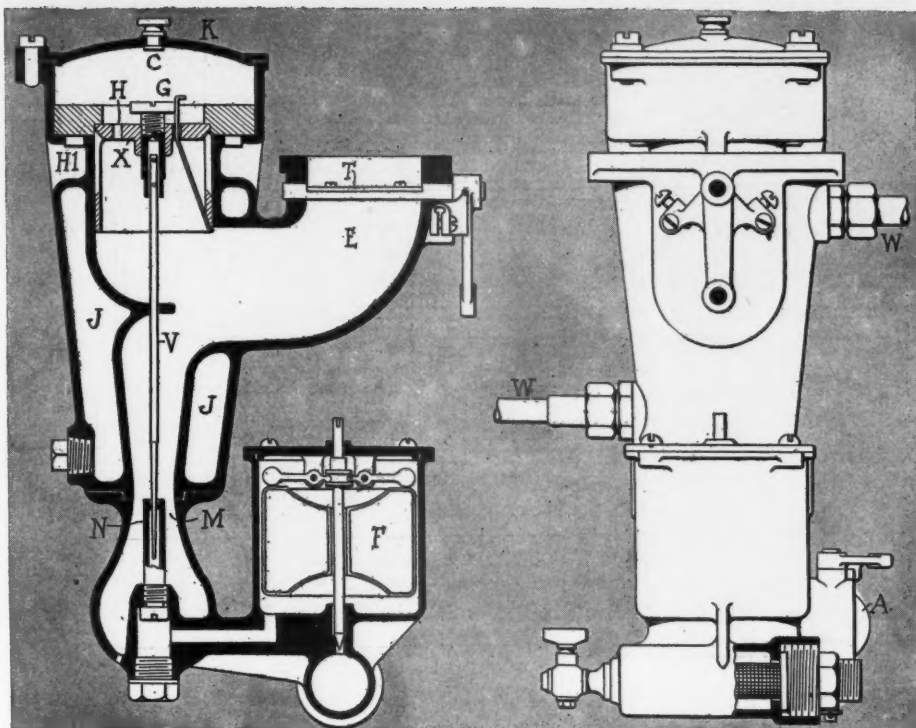


FIG. 2—NEW ALCO CARBURETER WITH NEEDLE CONTROL

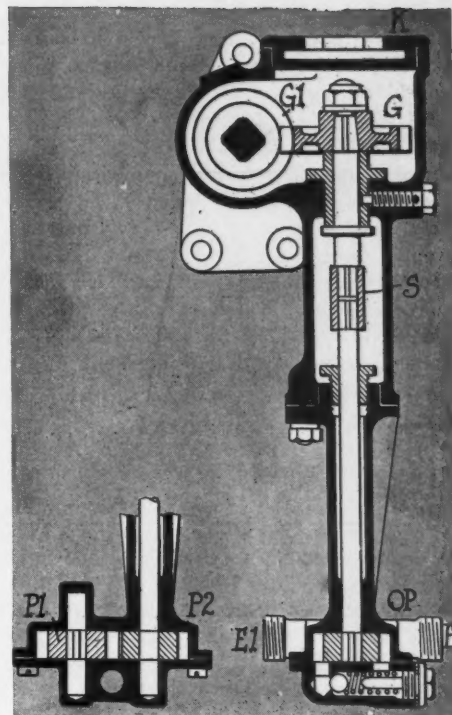


FIG. 3—ALCO OIL PUMP DRIVE

Improved in Detail For 1911 Trade

E and E1. In order to quickly inspect the drive gears a threaded cap K is used as a covering for the housing. Every detail of this pump is given the same careful attention that is bestowed on the other points of the Alco.

In Fig. 1 appears the valve construction, the valves being located on opposite sides of the T-type of cylinder. The intake valve illustrated is adjustable through the nut and lock nut on the upper end of the lifter rod LR. This lifter rod carries the usual roller LR on its lower end, which bears upon the cam on the camshaft C, all cams being integral with the shaft. Within the lifter guide is a lifter spring LS, which holds the lifter rod up against the lower end of the valve stem as well as holding the lifter roller down against the cam, thereby reducing the noise from these parts.

New Alco Carbureters

The Alco carbureter, fitted on all models, is after a design of D. B. Gray, engineer for the company. As shown in Fig. 2, it is of the separate-float design and combines an auxiliary air valve and venturi-tube construction. The gasoline flow

is controlled by the metal float F. In the nozzle N is a needle valve V carried on the auxiliary air valve X, so that as this valve opens by lifting upwards the valve is withdrawn from the nozzle and more gasoline allowed to flow. The operation of the auxiliary air valve is, briefly, as follows: The valve X is located in a special compartment having a removable cover K. In the valve is an opening H, communicating with the space above the valve. A series of openings H1 afford the passage for the auxiliary air taken in from the atmosphere. In operation the valve works as follows: A motor demanding more air, draws some through the opening H, creating a partial vacuum above the auxiliary air valve, which causes the valve to rise, uncovering the holes H1. The needle valve N may be adjusted through the adjusting head G so that the opening in the nozzle N may be regulated to suit the conditions.

The air circuit in this carbureter is through the opening A in the right half of the illustration, this opening being guarded by a shutter valve to facilitate starting. All air entering by way of valve

A finds its way through the venturi passage M, where it takes up the gasoline and passes to the motor by way of the mixing chamber E, and past the throttle T. The shape of the mixing chamber is such that the curved sides at the left direct both the main air supply and the auxiliary air supply towards the throttle T, so that the confusion between main and auxiliary currents is reduced to the minimum. The mixing chamber is well waterjacketed, water entering at connection W and leaving from connection W.

In regular operation the main supply A supplies all motor demands. The only adjustment provided is that of raising or lowering the needle valve V. There is not a spring used in conjunction with this carbureter.

In Fig. 4 is illustrated the compression relief scheme used for holding the exhaust valves open when cranking the motor. On the exhaust camshaft C are relief cams R, which are brought into use by sliding the camshaft endwise by the handle H, which projects underneath the radiator, where it is conveniently located for starting purposes. Pulling the handle H forward gives the camshaft the necessary end movement through the lever L, which is carried on the shaft S. From this shaft is carried the yoke Y, which engages between two collars on the camshaft. Locating a spring S between the arms A supplies means for forcing the camshaft back to its normal position when the handle H is released. The one arm K is attached to the shaft S, whereas the other is attached to the yoke Y, the result being that to slide the shaft endwise the spring is first compressed, after which the necessary movement is affected.

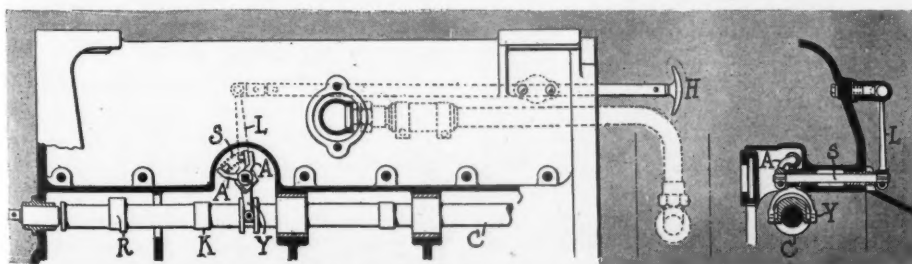


FIG. 4—SHOWING RELIEF CAMS R AND HOW CAMSHAFT SLIDES

Perhaps nothing in the transmission system of the Alco is more conspicuous than its rear axle, Fig. 7, which is now being used for the second season. The conspicuousness of this axle is that the axle sleeves H, together with the ring part enclosing the differential, is made up of a one-piece forging extending from the wheel hub at one side to the wheel hub at the opposite side. Its construction is shown in Fig. 8, in which H again shows the central ring portion which forms the cradle into which the differential is nested, the complete differential set being carried in the part H1, which bolts direct to the forging H. The casting H2 carries the pinion and shaft which form the connecting link between the propellershaft and the differential. A large cover piece H3 forms the rear of the housing. Referring again to Fig. 7, the general axle details are shown. The pinion P is carried between two races of Hess-Bright ball bearings, a large race B at the forward end and a smaller race B1 at the rear. Both of these bearings are carried in the piece H2, shown in Fig. 8, their position being designated by B and B1 and P showing the location of the pinion between them. Additional care in construction is shown by a thrust bearing located in advance of the larger bearing. This thrust bearing is backed up by the cap K, Fig. 8. This cap contains a double packing for the prevention of lubricant leaking. A special lock-nutting feature is shown for retaining the cap K.

The differential set, with its large bevel B, is carried on two races B3 of Hess-Bright bearings and back of the bevel B is a thrust bearing. Each of the bearings B3 is held in position, Fig. 8, by the semi-circular caps Z, so located that by removing the cover H3 these caps may be taken off and the differential removed. In a similar way the part H2, carrying the pinion with its shaft, may be removed.

As in all floating constructions, the road wheels are carried outside of the axle tube H, in this case there being two races of Hess-Bright balls B2 for taking the wheels. The drive from the axle shafts S

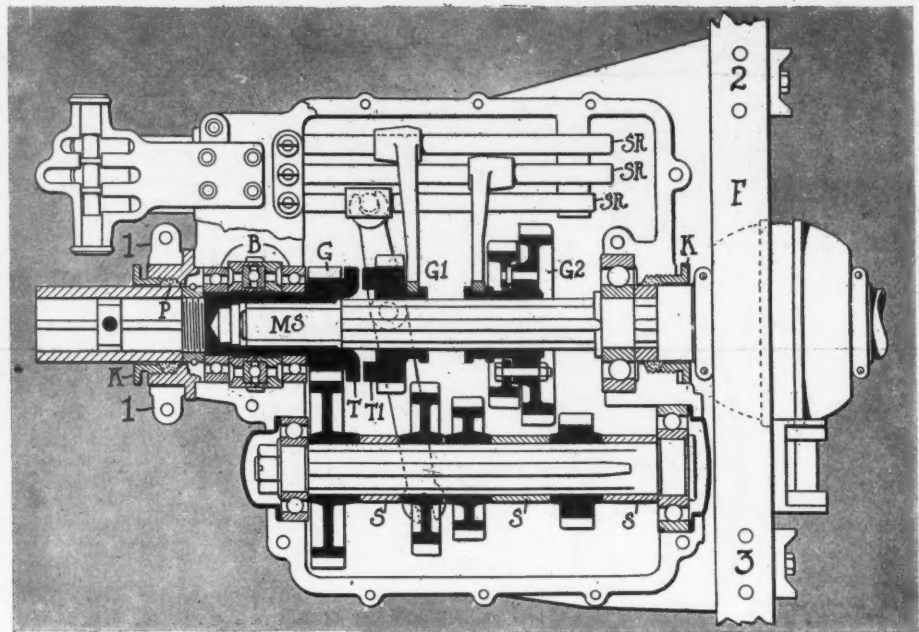


FIG. 5—PLAN SECTION OF ALCO FOUR-SPEED SELECTIVE GEARSET

is through the usual clutch to the wheel hub, these clutches fitting on the hexagonal end of the axle shaft.

The Alco cars have always made use of a selective gearset affording four forward variations. In Fig. 5 the general details of this set are shown. It follows the horizontal design in that the mainshaft MS and secondary shaft are in the same horizontal plane. Using this construction necessitates a gearbox, Fig. 6, divided midway of its height with the Hess-Bright bearings located between the halves. A direct drive in this set is through clutch teeth T on the master pinion, being meshed with corresponding teeth T1 on the forward sliding unit G1. On the mainshaft is to second sliding unit G2, made up of two gears bolted together. All the gears on the secondary shaft are held in their necessary positions by spacing sleeves S instead of by being pinned or otherwise secured. The prevention of oil leakage is adequately cared for. At either end of the countershaft are caps entirely covering the ball bearings, and rendering

leakage impossible; and, at either end of the mainshaft is a threaded ring K, which holds the packing P in position. Although the gearbox is apparently large, this is largely due to carrying the three shifter rods SR entirely within the case. An example of the care of construction in this set is shown in the use of double ball bearings B, supporting the short shaft which is formed integrally with the master pinion G. Between these races of ball bearings is a thrust bearing. This gearset is carried on a three-point support, a single forward support at 1 from a cross member of the frame, and two rigid rear supports at 2, 3, from a cross member F' of the frame. The forward support 1 will permit of a rocking movement should strains on the frame necessitate such. In Fig. 6 the general method of suspension from the cross members of the frame is shown. This illustration also shows the location of the sliding reverse gear G3, located in the base of the case. At the forward end of this illustration is shown the neat construction of the drop arm A, which engages with the three shifter rods of the set. The shaft carrying this arm is supported through a bracket from the frame member F.

In Fig. 9 is shown the general brake construction, consisting of an internal and external set operating on each rear wheel drum. A convenient adjustment of the external set is through the adjustment of the winged nut A. Dragging of this brake is prevented by the spring S. The bell crank B is carried vertically, as illustrated, and from its lower end a linkage to the brake control connects. The internal brakes are fulcrumed at F and expanded at their free end by the double cam K. Dragging of these brakes is prevented by the spring S. Brake drums are of pressed steel, and raybestos covering is furnished for each set. The brake

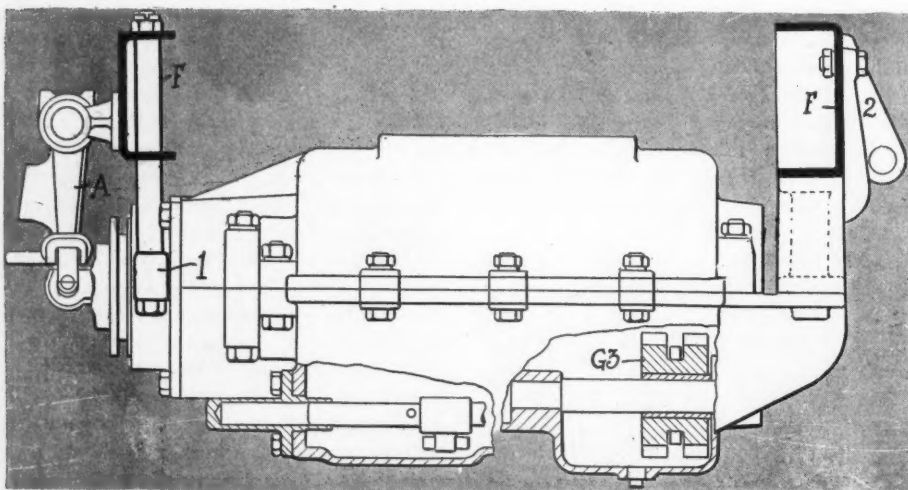


FIG. 6—THREE-POINT SUPPORT OF ALCO GEARBOX

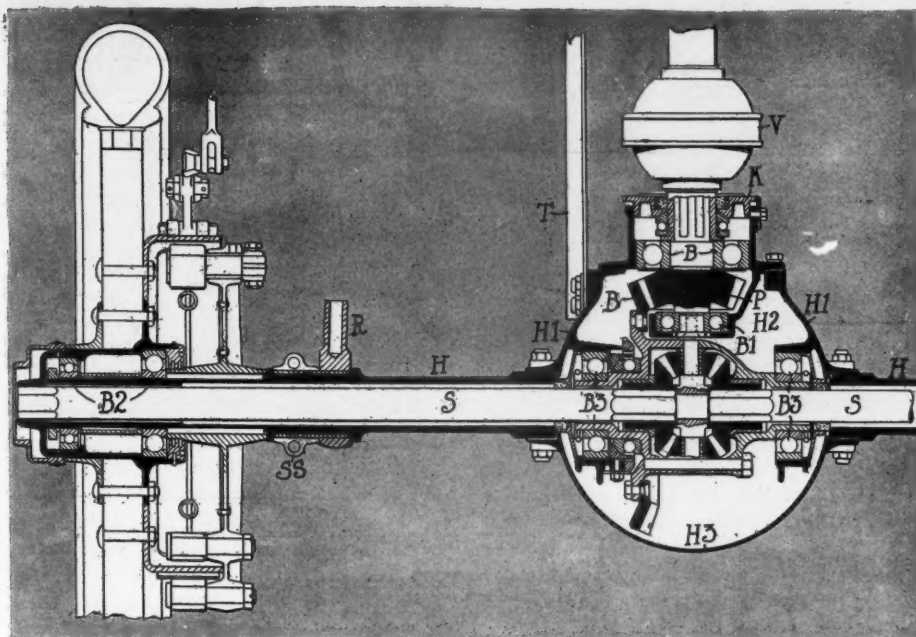


FIG. 7—ALCO REAR AXLE WITH FORGED HOUSING

drum has an internal diameter of $15\frac{1}{2}$ inches with $2\frac{7}{8}$ -inch width. The width of the external brake band is 3 inches.

In the Alco running gear strength is everywhere apparent. The side members are dropped $2\frac{3}{4}$ inches in front of the rear axle. These members are made of stock $\frac{1}{8}$ inch thick, with a maximum depth of 5 inches, which tapers to $1\frac{1}{8}$ inch at the front end and 2 inches at the rear. The flange at its widest part measures $2\frac{3}{4}$ inches, from which it tapers to $1\frac{1}{8}$ inch at the front and rear. Semi-elliptic alloy steel springs are used. These are the same size in the four and six-cylinder models, namely, $35\frac{1}{2}$ by 2 inches in front and 55 by $2\frac{1}{2}$ inches in rear. The front axle is a one-piece I-beam forging of alloy steel. The steering gear is of the worm-and-sector type.

TESTS ELECTRIC OMNIBUS

Manned by factory officials and carrying a representative of Motor Age on a special trip of about 35 miles, the new Field electric omnibus was given a practical test October 7. The start was from the Edison

factory in Orange and the course was a devious one over all kinds of roads and all kinds of grades.

The motive power of the car is furnished by Edison storage battery cells, seventy-two in number, which generate about 25 horsepower to run two 7-horsepower motors. These cells and some refinements and details of construction form the main elements of difference in the new trackless car as distinguished from other electric buses. The new cells used on this car weigh about 1,800 pounds, compared with 3,500 pounds for the lead-acid batteries used on cars of similar power here and abroad. Thus a saving of 1,700 pounds is effected by the use of the improved type of cells.

The formation of the batteries is as follows: Each cell consists of eight positive and nine negative plates. The latter are made of oxide of iron and alternate with the positive plates in compact form. The positive plates are made up of thirty cylinders of nickel, perforated to allow

free circulation of the caustic potash electrolyte, and strengthened with eight bands of steel. These cylinders, which are about the shape and size of a lead pencil, are arranged in a frame, separated across the center by steel framework. The nickel is shaped for this purpose by being plated on steel; then covered with a plate of copper, which is followed by another coat of nickel until the desired thickness is attained. The copper then is dissolved in an acid bath, leaving the nickel, flaky and porous and available for the purpose. No sulphuric acid is required in the electrolyte, and the claim is made for the new cell that its life is vastly longer and its efficiency much higher than the older type of lead-acid batteries. Tests in factory and laboratory, according to the engineers who have made the experiments for this car, show that the efficiency increases with use until it approximates 120 per cent, and then gradually falls to 100 per cent after about 600 discharges. The engineers say that the acid-lead batteries fall off rapidly from 100 per cent efficiency, and that 60 per cent of normal efficiency is reached at the same period that the caustic potash-nickel battery is showing about twice as much actual capacity.

The car itself is 22 feet long by 7 feet wide and has a seating capacity of twenty-nine passengers. The chassis is constructed of cold-rolled steel in side and cross members. The axles are of Krupp steel, composed of chrome nickel in the proportions of four parts of nickel to one and one-fourth of chromium in the steel alloy. The drives and brakes are inclosed in 22-inch drums bolted to the inside of the rear wheels, which are 36 inches in diameter. The brakes are both internal expansion and external contraction, and are capable of stopping the car within its length on a 10 per cent grade. The motors have four speeds ahead and four in reverse, which are provided by mechanical action from the dash.

The motors are separate, each having its own batteries and operating independently. The engineers say that they will adjust themselves to their work.

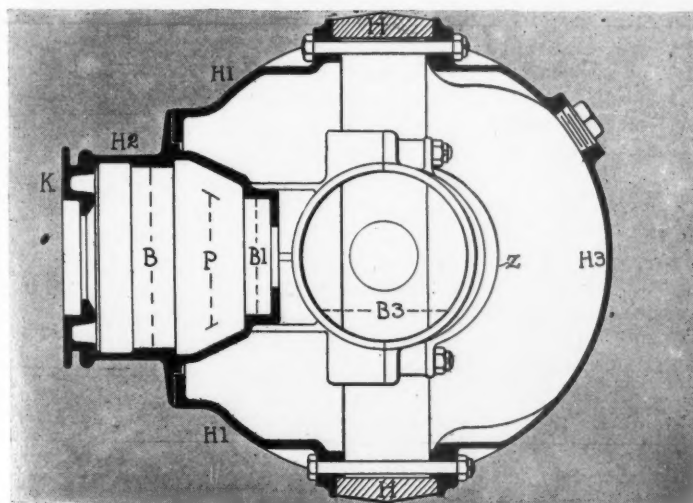


FIG. 8—BEARING SUPPORT IN ALCO REAR AXLE

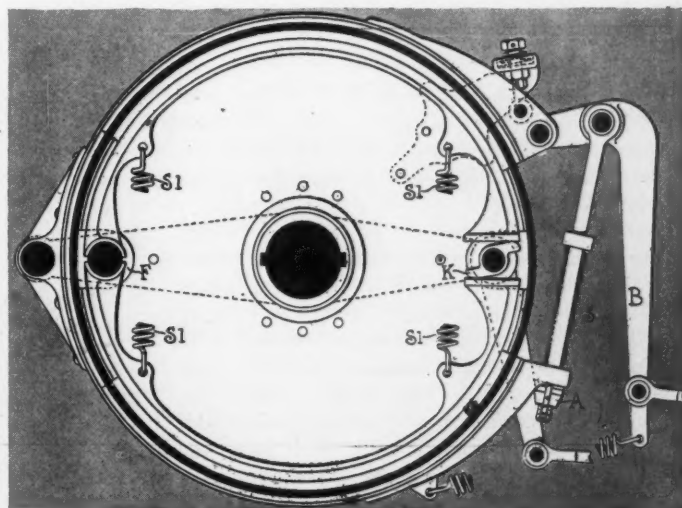
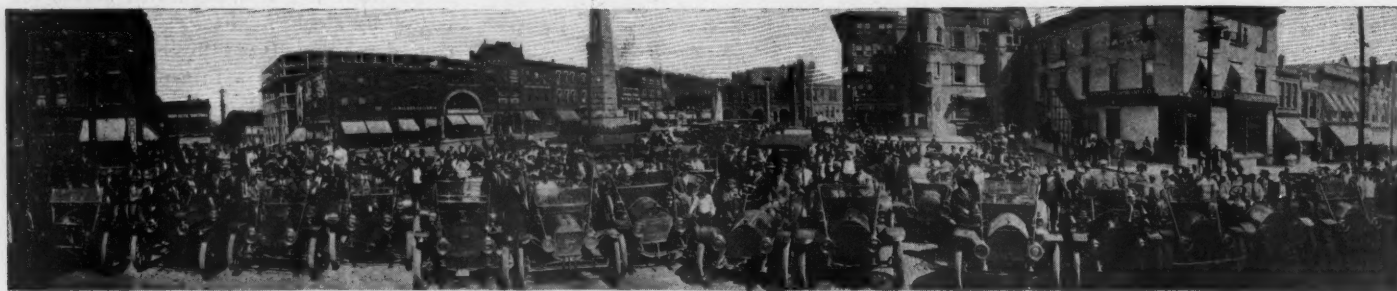


FIG. 9—DOUBLE BRAKES ON ALL ALCO CARS

From the Four Winds



MOTORISTS AT ASHEVILLE, N. C., GREET H. B. RACE, WHO BROKE JACKSONVILLE-ASHEVILLE RECORD IN FORD

FORD Owners Parade—The Ford is popular in the little town of Blair, Neb. G. A. Rathmann, dealer at Blair, recently had a parade of Ford cars, with the result as shown in the accompanying picture.

Assessors Are Fooled—According to the report of the assessors, there are only 1,946 motor cars owned in Milwaukee, Wis., with a given valuation of \$1,059,055. As is natural, only 25 per cent of the cars actually owned in Milwaukee is known to the assessors.

Louisville Waking Up—That Louisville is realizing the need of better thoroughfares and streets for the use of motor cars is being evidenced by the plans brought forth for boulevards and the setting aside of certain streets for the use of motor cars, and from the use of which all heavy traffic will be restrained. A project is on foot at the present time to make Third avenue, from Broadway south, a boulevard, and altogether it is an excellent one.

Practical Demonstration—For the benefit of visitors at the county fair held in Hillsboro, Ore., last week, a Brush run-about cut up a dozen cords of wood. It was displayed by the Oregon Brush Automobile Co., of Portland. One of the rear wheels was jacked up, the differential taking care of the other, a third wheel bolted to the spokes and power transmitted to a band saw by means of a rope belt. The idea of the demonstration was to show the farmers that the motor car is not for pleasure only. At different times this machine has been rigged up to pump water, run hay presses and churns.

Kentucky Routes—The latest addition to the growing list of volumes bearing the imprint of an A. A. A. club is the touring information book compiled by Eugene J. Straus, president of the Louisville Automobile Club, the initial cost of the publication being divided between Mr. Straus personally and the club, assisted by a fair amount of advertising. It is a snug, leather-bound volume, 7 by 4½ inches, containing 434 pages of type and several folding maps, including one of main roads in the state of Kentucky, and one of Louisville, showing at a glance the best ways

in and out of the city in almost complete detail. There also is included a very useful diagram exhibiting graphically the general situation of the main-traveled lines covered in the volume to the road system of the middle west.

Another Nebraska Club—The Aurora Motor Club, of Aurora, Neb., was organized last week, with Dr. Steenberg as president and John Dahl as secretary. Its object is to help the good roads movement and to protect the rights of motorists in the country.

Picnic for Rambler Owners—Owners of Rambler cars of South Bend, Ind., and vicinity were entertained at the country home of Mr. and Mrs. John C. Ullery recently. A picnic supper was served on the lawn at 6 o'clock, covers being laid for fifty-six, after which a short business session was held and the Rambler Club was formed. Charles Frazier, of the Frazier garage, was elected president and Miss Mary Ullery, secretary.

Seattle Club Growing—The membership of the Seattle Automobile Club, of Seattle, Wash., is close to the 500 mark, and it is expected that that many members will have enrolled by October 20, on which date the annual meeting will be held. It is desired by those interested in the Seattle motor organization that every owner in the Queen City be identified with the club, in order that an active campaign for good roads legislation may be carried on this winter, when the legislature meets.

Club Doing Good Work—The Automobile Club of Maryland has called the attention of the mayor and city council of Laurel, Md., to a bad stretch of road, which has ruined many tires. The officials of the Prince George's county town also have had their attention called to the prevalence of signs telling motorists not to go at a rate of speed faster than 6 miles an hour. As this order conflicts with the new state law the officials have promised to have the signs removed. As New Jersey is the only state in the north which requires motorists to obtain licenses before crossing the state borders, Secretary Luzius, of the Maryland club, has compiled a list of agencies where the neces-

sary tags can be secured and drivers registered. The members of the Automobile Club of Maryland are trying to have Secretary Luzius appointed by the state of New Jersey, so the local owners can get their tags more conveniently.

Rival Show in Sioux City—Dissatisfied with the management of the show last year, the Automobile Dealers' Association, of Sioux City, Ia., has decided to hold an independent show in the Auditorium some time in January, the exact date to depend on the dates of other shows in the territory. More space than last year will be arranged for in the auditorium.

Must Take Out Licenses—Justice S. A. Mann, of Spokane, Wash., has issued a warning to all private owners of cars in that city who have been in the habit of carrying visitors between the city and the fair grounds and reaping a harvest in this way, will be obliged this year to secure licenses the same as all taxicab, transfer and other companies or individuals that make a living by carrying passengers. Any violators will be prosecuted. This move was taken out of consideration for the regular bus and taxicab companies.

Goodrich Sign Work—The work that is being carried on by the B. F. Goodrich Co. in the erection of permanent road signs giving full information regarding the roads ahead, garages, repair shops, dangerous crossings, curves and speed possible, is being fairly commended by the farmers throughout the country. On the road from Cleveland to Buffalo and from Buffalo to New York, all of the signs have been erected and, without exception, the farmers have strongly commended the idea. They have promised to watch the signs. They have agreed to help in every way possible to make the signs permanent. As an instance of the interest that is taken in this road work now being carried on by the Goodrich company at an expense of over \$50,000, a farmer near Seneca Falls, New York, on the road from Buffalo to New York city, gazed at the signs for some time and finally said, "Well, that beats all of the guide signs I have ever seen. Now those motor fellows will not have to

ask a dozen questions every time they pass, as they are now doing." The Goodrich road markers are now covering the ideal tour route through New England, and providing the weather holds out they will soon be back on middle western roads, taking care of that district.

Converted to Road Cause—The Citizens' Business League of Milwaukee, Wis., has inaugurated a good roads campaign. At the convention of the Wisconsin State Hotel Men's Association in Milwaukee on October 7, resolutions were presented in support of the movement. Campaign material will be issued from the hotels, the managers to be the district campaign chiefs. Francis A. Cannon, secretary of the business league, is the originator of the idea. Plans have not been fully developed.

Indianapolis' Buyers' Week—Manufacturers, wholesalers and jobbers, members of the Indianapolis Trade Association, Indianapolis, will have a buyers' week October 18, 19 and 20, all lines of industry to be represented in the celebration. On the night of October 18 there will be an industrial parade which will be approximately 5 miles long. There will also be a motor car ride about the city for the visitors and a theater party and smoker. H. T. Hearsey, of the Hearsey-Willis Co., is chairman of the general entertainment committee. Carl G. Fisher and F. I. Willis are members of the parade committee.

Canadian Imports—During the year ended March 31, 1910, the imports of cars into Canada amounted to \$1,732,215, of which those imported from the United States were valued at \$1,569,227. The value of parts imported during the same year amounted to \$269,586, of which all but \$10,000 worth came from the United States. In spite of the fact that motor cars imported from the United States are subject to a greater duty than that imposed on motor cars imported from the United Kingdom, 35 and 22½ per cent ad valorem, respectively, the former country supplies nearly all the imports. Altogether, 1,424 machines were imported in 1910, of which 1,362 came under the general tariff, sixty



TURNOUT OF FORD OWNERS AT BLAIR, NEB.

under the preferential tariff, and two under the French treaty. During the year Canadian-manufactured cars to the value of \$405,011 were exported.

Wisconsin Licenses—The secretary of state of Wisconsin reports that on October 10 a total of 15,350 licenses had been issued, or a total of more than 5,500 for the present year. This gain is unprecedented.

Helping Road Cause—T. F. Stroud & Co., of Omaha, manufacturers of dirt scrapers and other road-making machinery, have given the good roads movement an impetus by offering to loan a complete road-making outfit to any board of county commissioners or responsible organization of farmers free of charge, if the latter will operate it and return it in good condition.

Numbers on Lamps—Since the new Kentucky state license law went into effect on June 14, there has been much grumbling on the part of Louisville motorists regarding that section of the law which requires the license number to be painted on the lamps. A letter has been received by W. H. Argabrite, secretary of the Louisville Automobile Club, from Dr. Ben L. Bruner, secretary of state, in which he states that the department does not consider the law, or rather that part of the law relative to the painting numbers on the lamps, as binding because of another section in the law wherein it states that

they shall not be required to carry any other marks of identification except the tags or number plates and the state seal.

Manhattan Club Election—The Manhattan Automobile Club, of Manhattan, Kan., has elected the following officers: President, Dr. J. D. Colt; vice-president, B. W. Smith; secretary-treasurer, L. R. Brady.

Takes Up Road Question—Hartington, Neb., has organized a club with W. S. Weston president and J. Albert Olsen secretary. Committees were appointed to look after the improvement of various roads leading into the city.

Collect Pennants—C. W. Clarke and his wife in a Marmon have just completed a 3-month tour covering 12,000 miles, taking home with them twenty pennants representing important cities and states through which they passed. They experienced no mechanical trouble whatsoever throughout this long journey.

Asks State Highway—P. C. Avery, president of the Avery Portable Lighting Co., of Milwaukee, Wis., has started a campaign for the construction of a public highway across the state of Wisconsin, from Milwaukee to Madison and LaCrosse, Minnesota to take up the road across the river from LaCrosse and extend it to Minneapolis and St. Paul. The Wisconsin State Automobile Association probably will take charge of the campaign. Mr. Avery gained the idea at the national good roads convention in St. Louis. He believes a good highway can be constructed at a cost of not more than \$25 per mile.

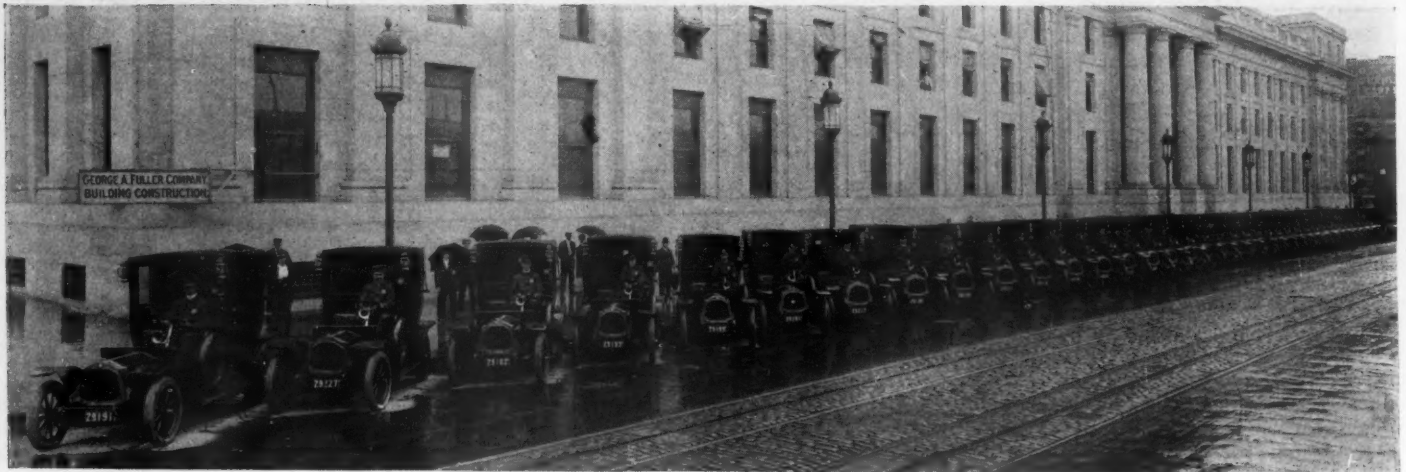
Judges Interested—Every county judge in Oregon has written the Oregon Good Roads Association pledging support to the state-wide campaign for better-built highways. Every county judge has expressed favor for the proposed constitutional amendment which will permit counties to pledge their credit for the construction of permanent roads. The situation now is that if the people of any county in Oregon want to build a road they can't do it unless they happen to have enough cash on hand after current expenses have been paid. As this rarely happens, the generally bad roads throughout the state are explained by this fact.



MR. AND MRS. C. W. CLARKE GATHER PENNANTS ON TOUR IN MARMON



The Realm of the Commercial Car



DE DION TAXICABS USED BY PENNSYLVANIA RAILROAD LINED UP BEFORE THE NEW DEPOT IN NEW YORK CITY

COMPLETE results of the first official cost test ever held between a motor car and a horse and wagon, were certified to the contest board of the American Automobile Association and announced by Chairman Samuel M. Butler. The figures show standards of economy in motor operation. The Maxwell model Q not only won the 6-day test in New York in a decisive manner, from every angle at which it may be viewed, but covered almost three times as much ground at less cost than the horse and buggy. Thus the first actual test between the two methods of transportation should silence the doubting Thomases who still cling to the notion that the horse is cheaper than the motor car. From the inception of the contest it has been saturated with conservatism in order that neither side would profit by extreme phases or facts. Inasmuch as passenger-mile cost was the basis of the test, it was decided that the motor car while not in operation should be locked up by the observers.

Gasoline and oil were the only items of cost and these were incurred along the route for the purpose of striking a fair average of retail prices. Since the horse also was touring, the feed was purchased in the same manner, to get liverymen's average price for feeding a transient boarder. Therefore, neither side had the advantage of wholesale prices and the figures show accurate touring conditions. Twenty per cent depreciation per year is allowed in the case of the motor car on a basis of 10,000 miles per year. This amounts to \$180 a year or .018 per mile. Depreciation on the wagon, harness and horse is based upon an original cost of \$275, the outfit lasting 10 years and supposedly capable of 10 miles travel every day, making the depreciation per mile \$.0075. Following are the summaries of mileage, disbursements and depreciation on each vehicle:

Motor Cheaper Than Horse

MOTOR CAR				
Day	Miles	Gasoline	Oil	Cost
1	67.4	5 gal.	1 pt.	\$ 1.00
2	76.1	5 gal.	1 ½ pt.	.92
3	76.3	6 ½ gal.	1 pt.	1.12
4	80.0	5 ¾ gal.	1 pt.	1.00
5	82.8	5 ½ gal.	1 pt.	1.07
6	75.3	5 gal.	1 pt.	1.09
457.9 miles at cost of.....				\$ 6.20
Repairs				8.24
Depreciation				
Total cost				\$14.44
Cost per mile.....				.0315
Per passenger-mile0157

HORSE AND BUGGY				
Day	Miles	Oats	Hay	Cost
1	28.8	12 qts.	20 lbs.	\$.95
2	35.5	12 qts.	20 lbs.	.95
3	31.2	12 qts.	20 lbs.	.95
4	35.8	12 qts.	20 lbs.	.95
5	34.4	12 qts.	20 lbs.	.95
6	31.6	12 qts.	20 lbs.	.95
197.3 miles at cost of.....				\$5.80
Repairs				
Depreciation				1.47
Total cost				\$7.27
Cost per mile.....				.0368
Per passenger-mile0184

As in every test, certain factors must be assumed. In this one it is held that the cost of shoeing, bedding and wagon grease will more than offset the omission of grease charges from the motor car's operating cost. These costs, distributed over the actual mileage for each vehicle, bring the motor car net cost per passenger mile well within the 2-cent-a-mile guarantee established by the Maxwell-Briscoe Motor Co.

HATFIELD DELIVERY WAGON

The Hatfield Co., Cornwall-on-Hudson, N. Y., is marketing a 1,000-pound delivery wagon in either the express or enclosed type. This delivery wagon is supplied with pneumatic and solid tires; a speed of 20 miles per hour being possible with pneumatic and 18 with solid tires. The company employs a friction-drive chassis containing a two-cylinder air-cooled motor, 4 ¾ by 4 inches. The friction set is made up of a 17-inch flywheel with an alloy face, forming the disk and a 17-inch wheel



WHITE 1,500-POUND DELIVERY WAGON USED BY BALTIMORE SUN



HATFIELD COMPANY'S NEW 1,000-POUND DELIVERY WAGON

with a fiber end carried on a cross shaft or a jackshaft. The wheel can be slid across the face of the disk. Power is transmitted by chain to the solid rear axle. This axle is $2\frac{1}{4}$ inches in diameter and extends from wheel to wheel. The car is without a differential, but carries a substitute in the way of pawls and ratchets in the hubs of the rear wheels.

As illustrated in Fig. 1, each rear wheel carries a drum D in which are four pawls P for driving in one direction. The inner face of the drum, lying against the rim of the wheel, has another series of pawls P1 employed for driving in the reverse direction. The ratchet R in the brake drum, attached to the ratchet-carrier, shows both forward and reverse ratchets and the shifting of these ratchets as well as the ratchet-carrier is done by means of a cam on the ends of the axle between the spring support and the brake drum. This cam is automatically operated so as to shift the ratchet-carrier out of its normal position for forward driving, to reverse position, by a rod which extends back from the side, or change-speed lever, and throws the friction wheel on the jackshaft across the face of the flywheel into reverse position. The

ratchet-carrier is held in its forward driving position by means of a spring inside the end of the rear axle. This spring rests one end against the nut on the end of the axle inside the wheel hub, and the other against a key which passes through a slot in the ratchet-carrier and into a similar slot in the axle. This key serves to drive the ratchet-carrier, as it receives its motion, forward or backward, from the solid rear axle. There is not a gear wheel in connection with the whole transmission system, and the only gears in the car are those to drive the magneto and the camshaft. The front axle is made without steering knuckles, the axle swinging as in horse-drawn vehicles.

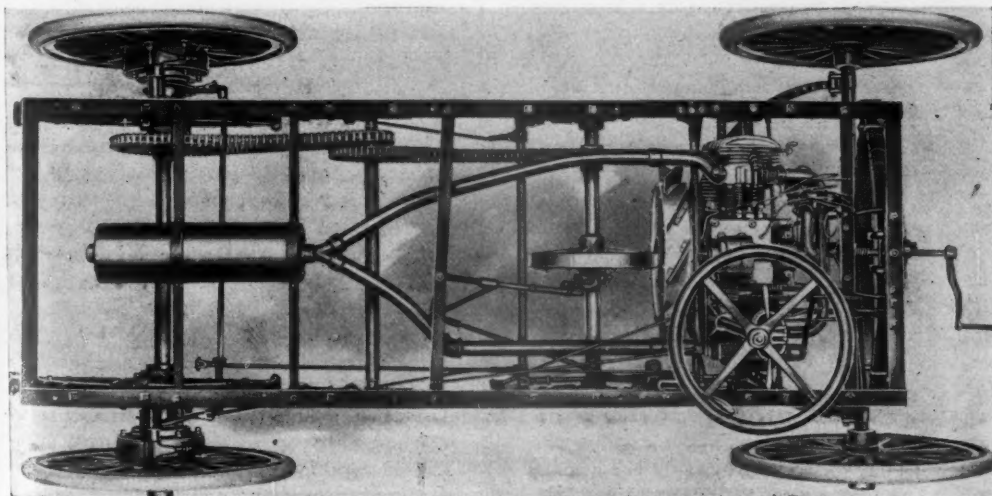
WHITE DELIVERS PAPERS

The use of the White 1500-pound delivery wagon is proving a success in the delivery of the Baltimore Sun in Baltimore, Md. This car was put into service June 1 and since that time has been delivering papers to the sub-stations in the suburbs of the city in an extremely efficient manner. In handling the early edition of the paper, the White truck is in service from 1 to 8 o'clock in the

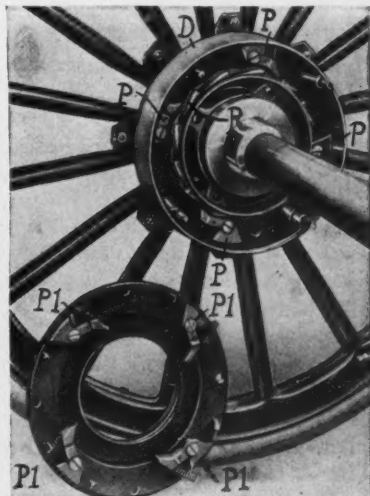
morning during the 7 days of the week while in conveying the afternoon papers to their various destinations, the truck works from 2 o'clock in the afternoon until 8 or 10 o'clock at night, Sunday being excepted. In this car, deliveries are made to sub-stations and carriers in the city and suburbs and the mail is delivered to and from the postoffice. The machine is in daily service from 14 to 16 hours. "Conservatively speaking," says J. W. Magers, circulation manager of the Sun, "the car does the work of two teams on short hauls and would displace three teams on long hauls—by long hauls we mean those that would exceed eight city blocks. The service this car has given has been a pleasant surprise to us and the more so that we haven't had any trouble at all as yet and we have been giving it considerably harder service than we had anticipated. During the eight morning trips the truck has run as high as 40 miles an hour, while it generally makes the excellent average of 25 miles an hour during the day. This mileage is exceedingly good considering that there are few cities in the country with streets so hilly and so hard on tires as those in the city of Baltimore. The truck has averaged 12 miles to the gallon of gasoline. There have been no repairs necessary during the first $2\frac{1}{2}$ months of service.

USING MORE TRUCKS

The Indianapolis News, Indianapolis, which recently began distributing its city circulation with motor trucks, now has twelve such vehicles in service, displacing twenty horses and wagons. These trucks distribute 55,000 papers to all sections of the city in about 1 hour 30 minutes, distribution being made to thirty-two supply stations and about 150 news stands. By sending the first papers off of the press to the outskirts, delivery to the thirty-two distribution stations is made at about the same time. A light motor delivery wagon supplies papers to the newsboys on the downtown streets. All of the trucks are supplied by the Willys-Overland Co. under contract.



CHASSIS OF HATFIELD DELIVERY WAGON—FIG. 1 SHOWING HATFIELD DIFFERENTIAL SYSTEM





THREE VIEWS OF THE GARAGE AND SALESROOM OF D. P. MCCLURE CO. AT OSKALOOSA, IOWA

WEBB JAY Rambler Manager—Webb Jay, formerly with the White and later with the Premier and United Motors, has been appointed manager of the Chicago Rambler branch.

Nadall Joins Rayfield—Berne Nadall, a member of the technical committee of the American Automobile Association and the Chicago Motor Club, has joined the staff of the Findeisen & Kropf Mfg. Co., of Chicago, maker of the Rayfield carbureter, as special factory representative.

Rhineland Moves—The Rhineland Machine Works Co., ball bearings and forgings, of New York, has removed its office from 50 Church street to 140 West Forty-second street, adjoining the Knickerbocker hotel, a location more convenient for the trade as well as out of town buyers in general.

Halladay Stock Increased—The capital stock of the Streator Motor Car Co., manufacturer of the Halladay, has been increased from \$30,000 to \$600,000. The company will declare a stock dividend of 800 per cent to present stockholders, it is announced. The balance of increase in new stock will be used as capital to enable the company to better take care of its growing business.

Jonz Company Election—The annual meeting of the Jonz Automobile Co., of Beatrice, Neb., was held last week and the following directors elected: B. B. Bales, Louisville; C. Charles Jones, N. E. Jones, C. R. Jones, George A. Culver, Beatrice; H. K. Cole, Louisville; L. A. Boll, Jr., Martin Seward, Kansas City; J. M. Howe, Barneston. The directors then elected the following officers: President, B. B. Bales; vice-president, C. Charles Jones; secretary, N. E. Jones; treasurer, H. K. Cole; gen-

eral manager, L. A. Boll, Jr. The reports of the officers showed that the concern is in first class shape.

Speir Makes a Change—John C. Speir has been appointed superintendent of the mechanical department of the Pennsylvania Auto Motor Co., Bryn Mawr, Pa., maker of the Pennsylvania cars.

Alco Branch Moves—The Chicago Alco branch last week moved into its new building at Michigan avenue and Twenty-fifth street. Three of the corners at this point now are occupied by motor car agencies—Alco on the southeast, Stoddard-Dayton on the northeast and Peerless on the southwest.

Becker Steel Co. Incorporated—The Becker Steel Co. of America has been incorporated under the laws of the state of New York to handle in the United States the products of Stahlwerk Becker, A. G., Willich, Germany, maker of steels of all descriptions, particularly alloy steels of difficult fusibility, which are electrically melted in Paul Girod furnaces. George B. Norcross is general manager of the Becker Steel Co. of America, and offices and warehouses have been established in New York and Detroit.

Pittsburgers After Site—A plant for the manufacture of cars is practically assured for Allegheny county, Pa. The Pittsburg Motor Car Co., which was incorporated at Harrisburg last January, is about to close for one of two desirable sites near Brad-dock and will break ground for its plant early this month. The company has been turning out cars for some time at its temporary plant at New Kensington, Pa. Among those interested in the concern are two well known engineers of Pittsburg, a Carnegie Steel Co. official and two other

practical men of large means. The project is capitalized at \$300,000 with an issue of \$350,000 in bonds.

Addition Nearly Ready—The four-story concrete addition to the big plant of the Whitney Mfg. Co., of Hartford, Conn., has almost been completed. The past year has been one of the best in the history of the company.

Heinemann Resigns—W. E. Heinemann has resigned his position as sales manager of the Smith Automobile Co., Topeka, Kan. Heinemann will devote his attention to private affairs for the present, but expects to re-enter the motor business again in the near future.

Tyler Transferred—C. H. Tyler, who has been with the United Motor Indianapolis Co., has been transferred to Cleveland, O., where he will have charge of the Columbia sales of the United Motor Cleveland Co. H. F. Hoover, who was formerly in Indianapolis, but who has been with the Chicago branch of the United Motor Co., will succeed Mr. Tyler in Indianapolis as the United Motor representative.

Cole Declares Cash Dividend—The Cole Motor Car Co., of Indianapolis, has announced that a 30 per cent dividend has been declared. Announcement is made of plans to double the output for the coming year, and notice has been given of the increase of capital stock from \$100,000 to \$300,000. Papers have been filed with the office of the secretary of state to that effect. J. J. Cole, president and general manager, states that the new stock is to be taken only by the present stockholders. In order to build the increased number of cars for 1911, an addition was recently made to the Cole factory, giving 30,000 more square feet of floor space, and

a new building for the local sales department has been erected at Capitol avenue and Vermont street.

Smith's New Appointment—Ernest L. Smith has been appointed western representative of the R. I. V. Co., of New York, with headquarters at Detroit. He will leave his present position as sales manager of the Grant-Lees Machine Co. this week to take up his new duties.

Starts in Charlotte—The Charlotte Motor Co. is the name of a new concern at Charlotte, N. C. A. Burwell, Jr., E. F. Stenerson and B. D. Springs are the organizers of the new company, which will have office and show rooms on College street. Mr. Burwell is manager of the company. The company has the agencies for the Overland, E-M-F and Flanders.

Opening Downtown Garage—A downtown garage and repair shop will be opened in Indianapolis by the Willys-Overland Co. The building at 330-336 East Market street has been leased and will be equipped in a thoroughly modern manner. The company has a large number of trucks leased to business concerns under contracts, and these will be garaged and maintained downtown, instead of at the factory, as in the past.

Has Model Plant—The D. P. McClure Co., of Oskaloosa, Ia., distributor for the Oakland, Maxwell, Hupmobile and Regal in southern Iowa and northern Missouri, has recently taken possession of its new building, which is regarded as a model of its kind. It is located on a lot 120 by 120, occupying a quarter of a block. The building is made of brick and the partition between the wholesale and retail departments is of plate glass. The floors of the display rooms and offices are made of cement.

Norton Elected Treasurer—F. Lee Norton, general manager of the J. I. Case Threshing Machine Co., which recently purchased the entire output of the Pierce Motor Co., of Racine, was elected treasurer of the company to succeed Charles L. McIntosh, of Milwaukee, who died in Italy. Mr. McIntosh also was president of the Pierce Motor Co. It is believed that the change was made in order to permit Mr. Norton to assume general charge of the motor car department of the Case company.

Pennsylvania Tire Election—At the regular annual meeting of the stockholders of the Pennsylvania Rubber Co. the following officers and directors were elected for the ensuing year: Herbert DuPuy, president; Seneca G. Lewis, general manager; G. M. DuPuy, vice-president; H. Wilfred DuPuy, treasurer; C. G. Morrill, assistant treasurer; George W. Shiveley, secretary. Directors: Herbert DuPuy, Seneca G. Lewis, C. M. DuPuy, H. Wilfred DuPuy, George W. Shiveley. The report covering business for 6 months for the fiscal year ending August 1 showed an increase in sales over a corresponding period of last

year of over 95 per cent, and contracts in hand insuring a similar increase for the ensuing 6 months.

Law Quits—Fred A. Law, lately superintendent of the Columbia Motor Car Co. and more recently connected with the New Departure Mfg. Co., in the motor car department, has severed his connection with that concern.

Makes Commercial Demonstration—F. A. Whitten, of the Lamsden Co., of Newark, N. J., has been demonstrating a Lamsden 1-ton delivery wagon in the cities along the coast from New York to Boston. The trip was made overland from New York to Boston, the car being used for demonstrating purpose in Bridgeport, New Haven, Hartford, Springfield, Worcester and Boston. It is expected that the Lamsden company will shortly establish a branch in Hartford, Conn.

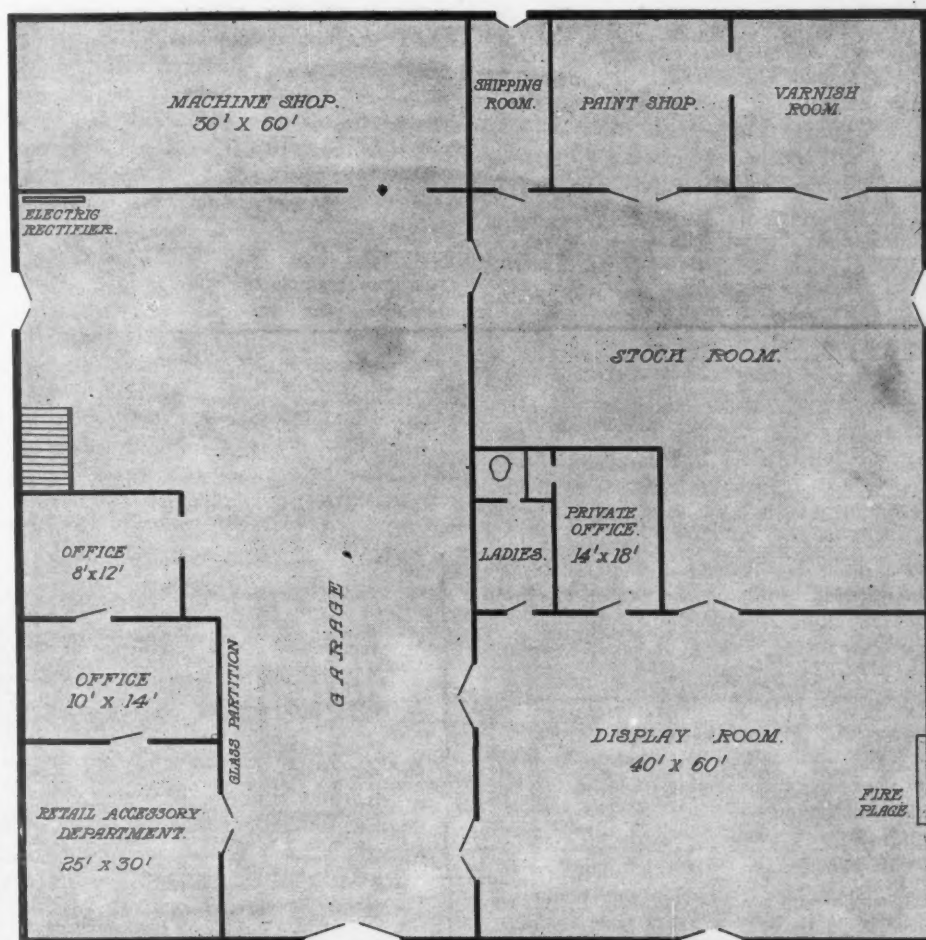
Schacht Building New Factory—The Schacht Motor Car Co., Cincinnati, has outgrown its old quarters and is building a new factory. The new building is to be 500 feet long by 70 feet wide and three stories high. It is being constructed of buff pressed brick and will have offset boiler and engine rooms. Its cost will be \$100,000 without equipment. At the time of securing the ground for this building the Schacht people secured enough space to permit the erection of three more similar buildings. These will be built as soon

as necessity demands and it is expected that one or more of them will be erected within the next year.

Krit Branch in Portland—The Krit Motor Sales Co. has opened a branch in Portland at 275 Union avenue north, with J. L. S. Snead as manager. This company has already established branches in San Francisco and Los Angeles. The head offices of the establishment are in Santa Barbara, Cal.

Indianapolis Reorganization—There has been a reorganization of the Delaware Garage Co., Indianapolis, which conducts one of the largest garages in the downtown district. Cecil E. Gibson, of the Gibson Motor Car Co., is president; George W. Sturdevant is floor manager; William Jenkins, formerly with the Indiana Automobile Co., is superintendent, and Smith H. Jones, formerly with the Gibson Automobile Co., is cashier.

Stearns Declares Dividend—At the annual meeting of the board of directors of the F. B. Stearns Co., Cleveland, O., manufacturer of Stearns motor cars, a cash dividend of 25 per cent was declared as against 12 per cent paid the preceding year. The following officers and board of directors were elected: F. B. Stearns, president; R. F. York, vice-president; E. McEwen, secretary and treasurer, F. M. Stearns, E. A. Merritt, A. W. Thompson and Philip Wick, directors.



FLOOR PLAN OF MCCLURE GARAGE AT OSKALOOSA, IOWA

The Motor Car Repair Shop

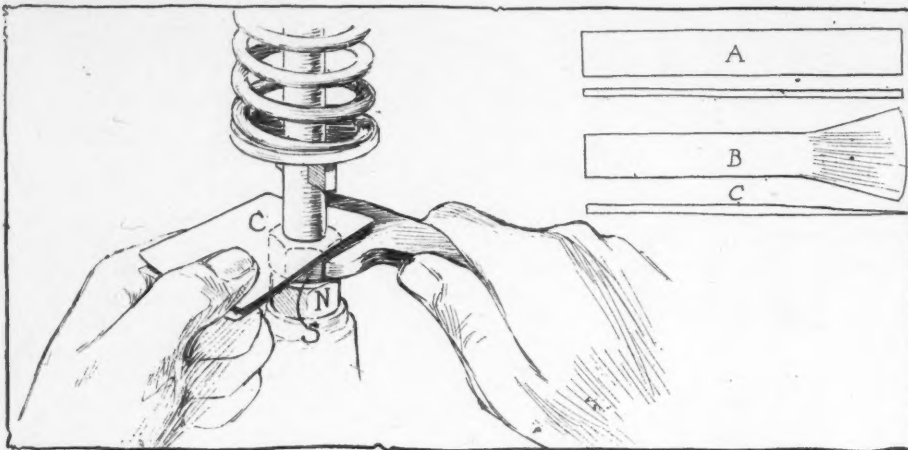


FIG. 1—ADJUSTING VALVE TAPPETS AND A TOOL FOR LOCATING NOISY ONES

In order that a motor may run as quietly as possible, with excessive wear of the valve mechanism eliminated, it is important that the valve tappets or push rods be kept in proper adjustment; and a few words and illustrations relative to the means and methods of regulating the space between the valve stems and the valve operating mechanisms may be appreciated by motorists whose motors are noisier than necessary on this account. Generally the space between the adjacent ends of the push rods and valve stems should be between 1-64 and 1-32 inch, sometimes more but rarely less. Of course the smaller the space the less noise, but sufficient space must be allowed for elongation of the valve stem due to expansion when the motor becomes warm, and for irregularities in the shape of the cam or roller. It often happens that one or two of the valve tappets of a motor may be greatly in need of adjustment, whereas the others are in comparatively good shape; in such cases there is a decided clicking sound at regular intervals when the motor is in operation. For locating the noisy valves in cases of this kind, a simple tool, such as is shown at B and C, Fig. 1, may be used to advantage. This is made from a strip of brass about 1-16 inch thick and 8 inches long, with one end tapered by laying the end on an anvil and pounding it into shape with a hammer. A tool of this kind can be readily slipped under a suspected valve stem as indicated in Fig. 3, and when the offending valve is found the insertion of the tool will cause the clicking to cease abruptly and the valve to remain quiet until the tool is removed.

Finding the Trouble

The experienced repairman can generally find a tappet that is badly out of adjustment in a very short time by simply working the tappets of each cylinder up against the valve stems and down

Adjusting Valve Tappets

again, with his fingers, while the pistons of the respective cylinders are on their compression strokes.

Adjusting the Valves

If all the valve stem spacings of a motor are to be examined and adjusted, perhaps the best method to follow is to turn the motor over by hand until the piston in the first cylinder is about half way up on its compression stroke, at which time both valves of that cylinder should be tightly closed; then examine the space between the stems and push rods. In the absence of a suitable steel gauge for regulating valve space, many repairmen use a common business card, as shown in Fig. 1. The card C is folded once and slipped between the ends of the stem and tappet, the lock nut N is loosened, and the stud S is screwed up or outward until it just begins to pinch the card and prevents it from sliding about as readily as at first. The card is then removed and the lock nut tightened.

When both the inlet and exhaust valves have been adjusted in this manner, each one should be individually tested with a

single thickness of the card to see if the valves remain tightly closed throughout their required period. This is best done by sliding the single thickness of card gauge back and forth as the motor is being turned slowly from the closing to the opening points of each valve. The marks on the flywheel may be used to advantage in this operation if accessible, but they are not necessary. One can slide the card under a stem and turn the motor over until the card is seized, indicating valve opening, then a little farther until it is free again, which marks the closing of the valve; now, by turning still farther and continually sliding the card about, if the card is not seized before the regular time for the valve to open, according to either the position of the piston or crank-handle, the adjustment is about right, and if the card is prematurely seized the space is insufficient. The valve in each cylinder should be adjusted in the same manner.

Two Tappet Adjustments

In Fig. 2, a sectional view of the Oldsmobile valve tappet is illustrated. From all outward appearances this tappet is not adjustable, but if adjustment of the space S is desired, one has but to raise the valve stem V, remove the tappet and casing G from the motor, then take out plunger P and replace the disk D with one of a thicker or thinner size. These disks are furnished in thicknesses varying by thousandths of an inch. Another type of adjustable tappet that has given trouble to the uninitiated, is that of the Inter-State motor, shown in Fig. 4. The adjustable feature of this tappet is quite conventional, but to reduce the tappet noise to a minimum, all space between the valve stem V and the tappet stud T is eliminated by the spring S, which holds the stud T against the end of the stem V; the required space, in this case, being between the lower end of the sleeve L and a fiber disk D, where the sound is considerably muffled.

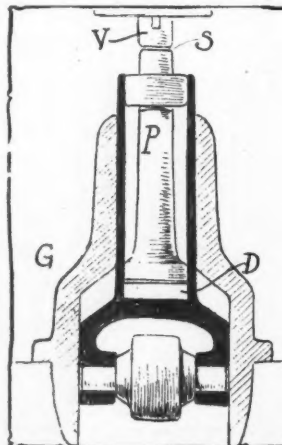


FIG. 2

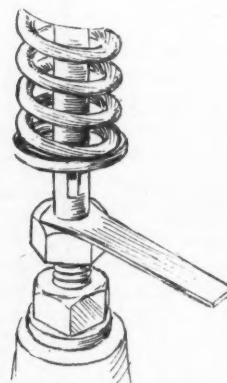


FIG. 3

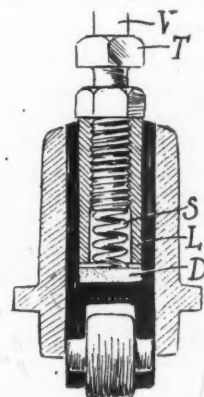


FIG. 4



Current Motor Car Patents

HANDY Valve-Spring Lifter—No. 971,375, dated September 27; to Oliver A. Hays, Southhampton, N. Y.—This patent relates to a device for facilitating the removal of engine-valves. A glance at Fig. 1 will show that it is not unlike valve-spring lifters now in use. It consists of a bar B having a notched edge throughout a portion of its length and an angular extension at its lower end which is provided with a claw end E adapted to fit under the valve-spring retainer-washer; an arm A adjustably engages the bar B at one end, and at its other end carries a sleeve in which the screw S is loosely mounted; clamping jaws carried by the sleeve and engaging the screw hold the latter in adjusted position. The advantages of this type of valve-spring lifter lie in the speed and ease with which it may be operated. To release a valve-spring one has but to slip the claw-end into position, raise the arm A to what is calculated to be about the proper height, open the clamping screw-jaws J, drop the screw down onto the head of the valve, close the clamping jaws J, turn the screw by means of the wings W until the spring-retainer washer clears the key K, then remove the key and release the spring by unscrewing the screw S.

New Water-Cooling System—No. 971,328, dated September 27; to Ralph Brooks Vaughn, Wilkes-Barre, Pa.—The cooling system covered by this patent is illustrated in Fig. 3, and it is interesting in that it is a radical departure from the conventional methods of motor car engine cooling now employed. The principal features of this system include a water supply tank T, a water-pump P, an air-blower B, suitable water and air manifold connections, and means to operate the water-pump and air-blower. In operation, water is drawn from the bottom of the tank T through a pipe by the pump P, and conducted to the lower portions of the cylinder-jackets by the manifold M. Leaving the jackets by

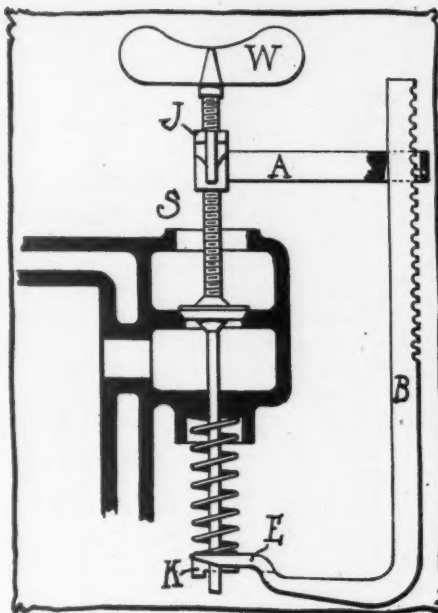


FIG. 1—HANDY VALVE LIFTER

way of the manifold F, the heated water enters the conduit C, through which a strong current of air is passing which is induced by the blower B. The heated water is thus vaporized and much of its heat absorbed by the air before it passes the baffle plates S and re-enters the tank T. The warm, moist air from the water tank then makes its exit through the duct D, by which it is lead to the air-intake A of the carburetor to improve the fuel mixture. A system of this kind would eliminate a very delicate feature of the motor car, the radiator.

Mixer for Gaseous Fluids—No. 971,332, dated September 27; to Hartwell W. Webb, Cresskill, and Edward H. Stickels, Edgewater, N. J.—This patent applies to a mixer for gaseous fluids arranged to be disposed in the path of gaseous currents to be acted upon. As in Fig. 2 it consists of a device suitable for attachment be-

tween the carburetor and the end of the inlet pipe which conducts the fuel to the motor. It comprises a tubular casing C having an outwardly flaring flange F at one end, spider arms supporting a centrally projecting stud at the other end, and a paddle wheel or fan mounted on the end of the stud. The fan is designed to be revolved by the currents which flow past it and thus break up the fluid globules in the mixture.

Motor Car Wheel Windlass—No. 971,075, dated September 27; to Otto E. Ritzmann, Detroit, Mich.—The device to which this patent applies comprises a means of converting the driving wheels of a motor car into a windlass for the purpose of utilizing the motor power to pull the car out of mud-holes and the like when the traction of the wheel tires is lost and they slip. With an appliance of this kind, by attaching one end of a rope to the windlass on the wheel that has lost traction, and securing the other end to a stake driven into the ground or some other sufficiently immovable object, the vehicle can be readily drawn out of a precarious position which might otherwise require the assistance of a team of horses and the delay and expense attached thereto. The device consists of a segmental drum for the hub of a drive-wheel, comprising a plurality of sector plates adapted to embrace the hub, each plate having means for attachment to the spokes of the wheel and a clamping yoke for securing them to the hub.

Appliance for Lifting-Jacks—No. 971,217, dated September 27; to Anton W. Sallander, Fort Madison, Ia.—The appliance to which this patent relates is shown in Fig. 4 and comprises a substantial V-shaped member M, having supporting portions S at the upper ends of its arms which project in opposite directions and are relatively offset and spaced. The object of this is to protect the truss-rod R of the rear axle.

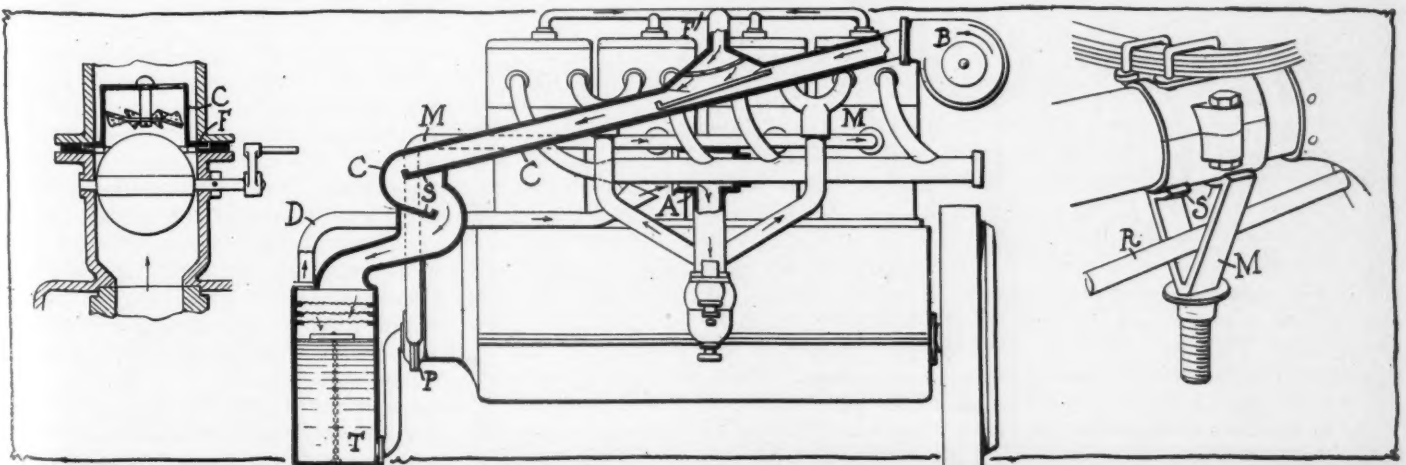


FIG. 1—MIXER FOR GASEOUS FLUIDS

FIG. 3—NEW WATER-COOLING SYSTEM

FIG. 4—APPLIANCE FOR LIFTING JACKS

PROTECTING GREASE CUPS

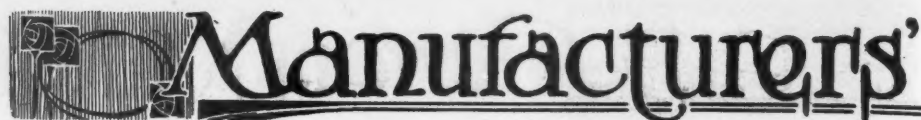
ROCHESTER, N. Y.—Editor Motor Age—An effective way in which to cover up grease cups or the small oil cups which supply such parts as steering knuckles and connections, spring shackles and rear axles with oil, so that they may be kept free from dirt and mud, which accumulates on them and which is carried through into the bearings with the grease or oil when the cup is filled, is to procure a number of hollow rubber balls, of just such size that the cups will fit within them, and to enlarge the holes so that they may be forced over the cups and get a tight grip on the bottom part. These balls will make an absolutely tight covering for the cups and can be painted the color of the car, so that they do not by any means appear unsightly.—Vacuum Oil Co., Frank B. Killian.

ENCLOSED CARS POPULAR

Buffalo, N. Y.—Editor Motor Age—Whether the experience this fall of the Pierce-Arrow Motor Car Co. in regard to enclosed cars is typical of the whole industry is a question, but it is a fact that its records show that the demand for enclosed cars is far in excess of that of any other year. Periodically at the Pierce-Arrow plant percentages on body styles and colors are struck. By means of these the company is enabled to know at all times just what the trend of the buying public is in general and particularly toward its own cars. The figures so far this season show that the proportion of enclosed cars to the total output is a trifle more than 60 per cent greater for the present season than it was for 1910 cars. This increase amounts to about ten cars in each hundred.

The demand for enclosed cars is heavier, of course, in the fall than at any other time of the year, but it is not expected that the figures obtained for the season's business as far as it has progressed will be altered to any material degree. One of the reasons for this belief is that of the enclosed cars ordered so far, the suburbans and broughams, or limousines as they are popularly known, outnumber the landaus and landaulets in the proportion of more than three to one. Landaus and landaulets will be ordered in the spring, if the experience of other seasons holds good, owing to the fact that they are ideal in spring and summer, when they may be used in either open or closed form, according to weather conditions. A fact which has undoubtedly had a large effect in the great increase in enclosed car orders has been the marked extension of manufacturing facilities for turning out these bodies in quantity.

When it began to deliver its current 36 and 48-horsepower models in the latter part of August this year, the Pierce-Arrow Motor Car Co. inaugurated a change in its manufacturing methods, the advantages of which to the users of its cars is already apparent. Since it has occupied its new factory the company has manufactured cars

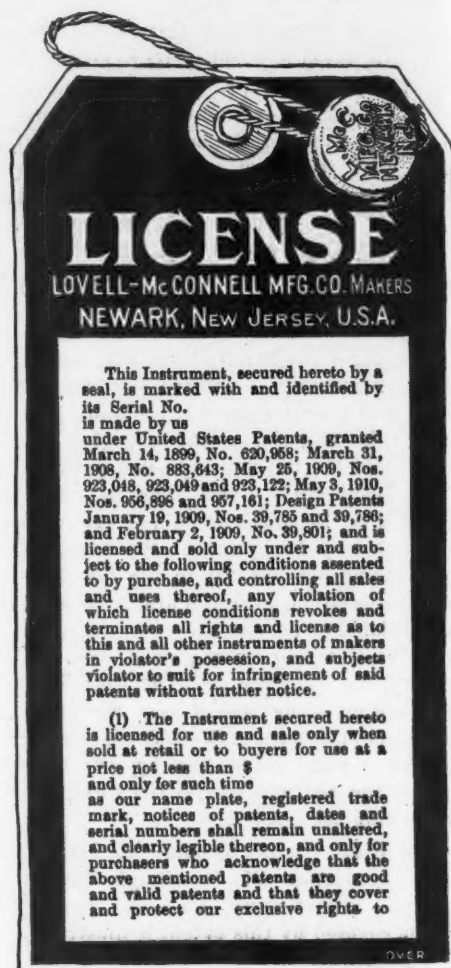


of at least three different horsepowers each year. It has been the custom to divide the year's output into what were called runs. By this method a month or 2 months would be devoted to turning out cars of one model. Then another model would hold the boards for 30 or 60 days. But try as the factory would it could not arrange the time of these runs to suit all its dealers. At the time one model would be in demand in one part of the country, it might be just between seasons for another model in another district. During the spring and summer the manufacturing facilities at the Pierce-Arrow plant were enlarged greatly by the addition of both new buildings and new equipment. As a consequence it has been found possible to do away with the old run system and now the 36 and 48-horsepower cars are being brought through side by side. The advantages have been particularly apparent this fall during the time the demand for enclosed cars has been greatest and it is expected that all the vexatious questions of priority in winter and spring deliveries will now be obviated.—Pierce-Arrow Motor Car Co.

TIRE FUTURE BRIGHT ONE

Akron, O.—Editor Motor Age—The tire business is bound to be larger in 1911 than it has been in 1910. I base that statement on the number of cars now running and the nearly 200,000 new cars that will be manufactured for next year's market. There is no doubt that the motor industry has had a check in the past few months, and that the tire industry, being an accessory of the motor car industry, has been affected. But that is past.

This year the country has absorbed new cars up to the number of 180,000. While up to 6 months ago plans were being made by manufacturers for 300,000 cars for 1911, the probabilities now are that the number built will be about the same as for this year. Some manufacturers will reduce their outputs for next year; others will increase them, so that in my judgment the average of new cars produced for 1911 will equal the number for this year. The tire business is bound to be larger in 1911 than it has been in 1910, taking into consideration the number of cars now running and the nearly 200,000 new cars that will be made for next year's market. It is true that tire manufacturers this fall will be somewhat late in starting. This is due to general business conditions, but commencing with the new year business will be as active as it has been. The quiet market at this time of the year is not unusual. In other falls, perhaps, local tire manufacturers have anticipated a coming year's business by building large stocks of tires and storing them until deliveries were called for. This year there is more



No. 1—LICENSE TAG PUT ON KLAXON HORNS

conservatism in building advance stock. That is all.—F. A. Seiberling, president Goodyear Tire and Rubber Co.

THE KLAXON SYSTEM

Newark, N. J.—Editor Motor Age—Thinking it might interest those in the trade who are endeavoring to eliminate the price-cutting evil, we are herewith sending Motor Age details of the system which we have worked out and which governs the sale of the Klaxon goods. This system consists of license labels, tags and billheads, and its effectiveness is testified to by the fact that it is impossible to obtain a Klaxon under its list price from any house anywhere. The system involves the use of three labels. No. 1 is our license label which goes on the outside of the boxes; No. 2 is the license tag which is attached to the instrument by a wire and red seal, it being illegal to cut this tag off the instrument before the latter goes into the hands of the actual consumer; No. 3 is the license agreement between the Klaxon company and its agents which is printed on the back of the billhead. Each instrument is serially numbered, the same number being found on the instrument itself.

Communications

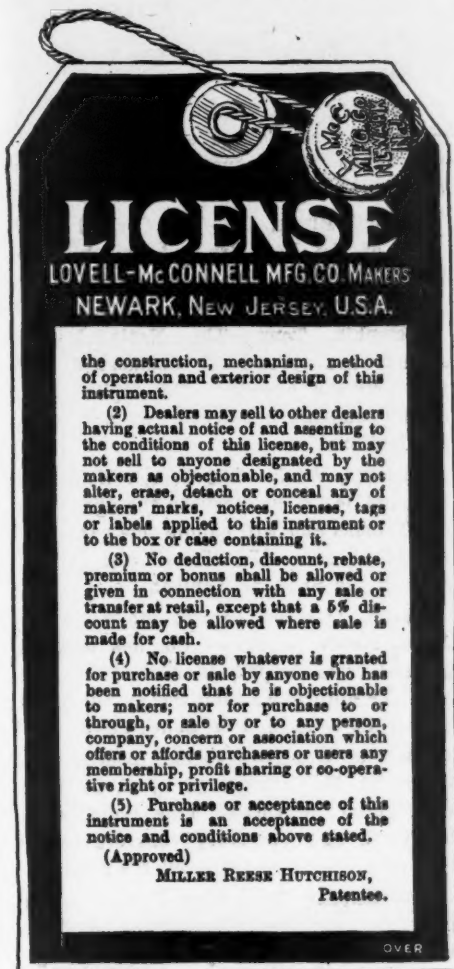


FIG. 2—LICENSE TAG PUT ON KLAXON HORNS

on the license tag and on the license label. Although this license arrangement has cost a great deal to produce, we find it very simple and if anyone wishes further information regarding its legal angles we suggest that he communicate with our patent attorney, George C. Dean, Singer building, New York city, who will be glad to elucidate the fine points of the system. We have no difficulty in stopping price-cutting by this means.—Lovell-McConnell Mfg. Co., F. Hallett Lovell, Jr., president.

SPEED OF THE LANCIA

New York—Editor Motor Age—I have just read with a great deal of interest the article on page 7 of the September 29 issue of Motor Age with the caption: "Wonderful Pace of the Little Cars." I think an article as a sequel thereto, from the same point of view, would be equally as interesting in reference to the performance of the Lancia car in the race on the motor parkway on October 1. The cylinder capacity of the Lion-Peugeot is 168 cubic inches, which would bring the car within the class in which the Lancia car raced in the Massapequa sweepstakes; namely, 161 to 230 cubic inches. If the cylinder capacity of the Lancia car, which is 210

cubic inches, and the weight of the car—2,185 pounds—are compared with the cylinder capacity and weight of the Lion-Peugeot I think you will agree with me that both chassis are quite on an equal footing. The Lancia car averaged 62 miles per hour for the seven full laps while the car was on the course. The fastest lap—12.64 miles—was made in 12 minutes 3 seconds, or at the rate of 63 miles per hour. The slowest lap, with the exception of the initial round of the course, was 12 minutes 17 seconds. The entire seven laps were covered without a single stop for any cause whatsoever, and I can assure you that the motor would have run as well at the end of ten laps had not misjudgment of a curve caused the wrecking of the machine. It also is interesting to note that the Lancia car made better time than any of the cars entered in the Wheatley Hills trophy, regardless of the fact that the cars in the event were limited to a maximum of 300 cubic inches cylinder capacity. I feel quite sure that the mechanic was truthful in his statement that the Warner speedometer at times showed a speed of 79 miles per hour. The speed performance of the Lancia I feel sure will be a record for a number of years for cars of this size: bore 100 millimeters, stroke 110 millimeters.—C. H. Tangeman.

VEGETABLE CAST IRON

Richmond, Ind.—It is very possible that Yate and Australian hardwood may yet be one of the most important factors in the building of the motor car. Official tests of the many valuable hardwoods native to western Australia have made known the extraordinary properties of yate, believed to be the strongest of all known woods. Its average tensile strength is 24,000 pounds to the square inch, equaling that of good cast iron. But many speci-

mens are much stronger, and one was tested up to 17½ tons to the square inch, which is equal to the tensile strength of wrought iron. The sawn timber of yate is probably the strongest in the world. The tree grows to a maximum height of 100 feet, and has sometimes a diameter of 2½ or even 3 feet.—Burton J. Westcott, president Westcott Motor Car Co.

EXPORTS AND IMPORTS

Washington, D. C., Oct. 8—Exports of motor cars and parts continue to grow at a rate that is highly gratifying. The latest returns show that during August 656 cars, valued at \$897,322, were shipped abroad, as compared with 360 machines, valued at \$557,934, exported in August a year ago. Likewise the exports of parts, not including tires, rose from \$100,622 in August, 1909, to \$136,437 in August last. During the 8 months' period ended August the exports of cars rose from 3,140, valued at \$5,107,953, in 1909, to 5,967, valued at \$8,266,808, in 1910. The exports of parts, not including tires, during these periods, increased from \$526,492 to \$1,408,495.

During August cars and parts were shipped to the following countries: United Kingdom, \$205,007; France, \$15,699; Germany, \$49,334; Italy, \$7,510; other European countries, \$69,075; Canada, \$398,825; Mexico, \$70,492; West Indies and Bermuda, \$23,293; South America, \$60,443; British Oceania, \$68,212; other Asia and Oceania, \$46,806; other countries, \$19,063.

While the export trade continues to grow by leaps and bounds, the imports of cars and parts are losing ground with every succeeding month. During August last the number of cars imported was ninety-two, valued at \$196,674, while in August a year ago the number was 194 and the value \$333,960. Imports of parts, not including tires, dropped from \$114,973 in August, 1909, to \$9,469 in August last. During the 8 months' period the number of cars imported declined in number from 1,058, valued at \$1,926,603, in 1909, to 726 cars, valued at \$1,450,671, in 1910.

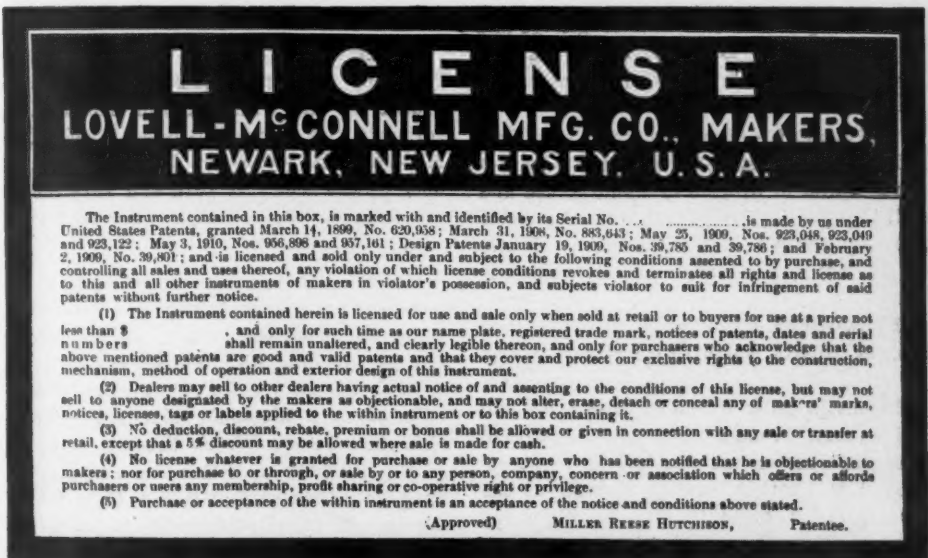


FIG. 3—LICENSE ISSUED BY LOVELL-McCONNELL COMPANY TO PREVENT PRICE CUTTING



Brief Business Announcements



WALLA WALLA, WASH.—D. V. Woods is now distributing agent for the Auburn car.

Seattle, Wash.—The F. H. Barshar Co. has obtained the agency for the Marion in Washington, Idaho and British Columbia.

St. Louis, Mo.—George C. Brinkham has taken the agency for the Wilcox truck. Salesrooms are at 2267 South King's highway.

Philadelphia, Pa.—Reamer & Haines, Philadelphia agents of the Baker electric, 2214 Spring Garden street, have just added the Mercer to their line.

Minneapolis, Minn.—The Frederick E. Murphy Automobile Co. has begun operations at Third street and Third avenue south. The company will handle the Mitchell.

Baltimore, Md.—The Lambert Automobile Co., which has the local agencies for the Maxwell and National cars, has taken over the Hudson, formerly held by the Zell Motor Car Co.

Oconomowoc, Wis.—Frank Shersmith is building a \$10,000 garage at Hartland, Wis., a lake resort hamlet. The building will be 30 by 50 feet in dimensions, of concrete construction.

Boston, Mass.—The Velie Motor Vehicle Co. has closed agencies with J. T. Curtiss & Co., Simsbury, Conn., and Frank E. Valier, Lynn, Mass., for the right of sale of Velie cars during the season of 1911.

Cincinnati, O.—The Ohio Motor Car Co. has closed an agency in Los Angeles with the American Automobile Agency of California and also with the F. H. Johnson Mercantile Co., San Francisco, for fifty cars.

Columbus, O.—The Auto Repair and Sales Co. is the name of a new garage located at 1146 North High street to do a general repair business. A new garage and repair shop has been opened on Parsons avenue, near Oak street, by Vincent & Engle.

Cleveland, O.—The Auto Acetylene Light Co. has been incorporated with an authorized capital of \$10,000 to manufacture and sell illuminating lamps and tanks for motor cars by Nathan B. Hordon, A. C. Knuth, F. M. Heidl, A. Mendel and C. A. Livingstone.

Philadelphia, Pa.—The G. Hilton Gantert Co., at 510-512 North Broad street, is soon to start extensive alterations to its establishment in order to afford more show and office room. A shop which at present occupies the rear of the building is to be removed to another location and all of the Broad street building will be given up exclusively to the exhibition of new models and more commodious offices. The Gantert

company has the agencies of the Selden and Stearns.

Spokane, Wash.—Chanslor & Lyon will open a branch house in Spokane at 1405-7 First avenue.

Portland, Ore.—Another new line has made its appearance in Portland—the Case—which will be handled by the J. I. Case Threshing Machine Co.

Sturgeon Bay, Wis.—The J. C. Dana garage was damaged by fire last week and several cars were badly damaged. The fire was caused by a defect in the acetylene gas system.

Cleveland, O.—The Fidelity Motor Sales Co., which was organized last week to handle the Moline line, will be located at 2364 Euclid avenue. A. S. Sykes is manager of the company.

Delphos, O.—The Mueller Implement and Auto Co. has been incorporated with an authorized capital of \$75,000 to manufacture and sell motor cars and implements by John Mueller and others.

Sioux City, Ia.—H. B. Groves, president of the Interstate Supply Co., of Sioux City, has been appointed manager for the state of Iowa, for the United Motor Des Moines company, a recently organized branch of the United Motor Co.

Milwaukee, Wis.—The Auto Supply Co. has been incorporated with a capital stock of \$20,000. Oscar F. Fischedick, member of a big Milwaukee engraving concern, appears as one of the incorporators. The others are J. D. Babcock and James T. Drought.

Canton, O.—A deed of assignment of the Deibold Motor Car Co. was filed recently in the probate court and Attorney A. Tallmadge Snyder was named receiver. The company has been operating a sales agency and garage at 130 North McKinley avenue.

Toledo, O.—In order to increase the floor space of the salesrooms of the Toledo branch of the United Motor Toledo Co., formerly the Maxwell-Briscoe Toledo Co., Manager McIntyre has leased the third floor of the rooms at 1012 and 1014 Madison avenue, which will be devoted to the repair department.

Moline, Ill.—Recent appointments of Velie agents are as follows: John Deere Plow Co., Portland, Ore.; Central Motor Car Co., Reading, Pa.; William I. Siegfried, Bethlehem, Pa.; Allen F. Parkes, Nashville, Tenn.; Memphis Machine Works, Memphis, Tenn.; W. H. Brewer, Raleigh, N. C.; Zimmerman Motor Car Co., Harrisburg, Pa.; Charles E. Miller & Bro., Washington, D. C.; A. A. Lilly, Brookhaven, Miss.; Marshall Auto Co., Marshalltown, Pa.; Russell Motor Car Co., New Orleans,

La., and the Fulton Auto and Supply Co., of Atlanta, Ga.

Pittsburg, Pa.—The Globe garage at Ellsworth and College avenues, east end, has taken the agency for the Schacht truck, which is built in Cincinnati.

Council Bluffs, Ia.—The Council Bluffs office of the Van Brunt Automobile Co., has just moved into a new garage and salesroom. The building is 150 by 150 feet.

Memphis, Tenn.—The National Auto Agency has opened for business at 232-234 Jefferson avenue. The capital stock of the company is \$50,000. It is handling the National.

Spokane, Wash.—The George W. Merrill Automobile Co. has secured the agency for the Thomas and will handle this car at 111 Pacific avenue. Mr. Merrill also is manager of the Spokane Taxicab Co.

Akron, O.—The capital stock of the Alton Motor Accessory Co. has been increased from \$50,000 to \$100,000 to provide for additional facilities in the plant. The plant is located on South street.

Tacoma, Wash.—A recent incorporation is the St. Helen's garage by G. D. Rushmore and T. W. Little. This company will occupy a new two-story concrete garage at South Fourth and St. Helen's avenue.

Philadelphia, Pa.—John H. Rosen, formerly of the Fournier-Searchmont Automobile Co., and latterly of the Autolight and Motor Supply Co., has now become affiliated with the Automobile Sales Corporation, 144-146 North Broad street.

Omaha, Neb.—The B. F. Goodrich Co., of Akron, O., has added to Omaha's importance as a supply distributing center by the announcement that it will open a branch here. The company will establish general sales headquarters in the Kennedy building at Nineteenth and Douglas streets.

New York—A contract has just been closed by the Owen Motor Car Co. with C. H. Teaboldt & Co., of New York city, who will have Greater New York and several counties in the immediate vicinity of the metropolis. Teaboldt & Co. are located temporarily at 1896 Broadway, but will shortly occupy permanent quarters at 1517 Broadway.

Philadelphia, Pa.—Charles L. Jackson, president of the Eastern Motor Sales Co., has gone to Alpena, Mich., to complete negotiations for the eastern sales agency of the Alpena Motor Car Co. The Eastern Motor Sales Co. is a recently-incorporated concern, with a capital stock of \$100,000, fully paid. It will control the entire eastern territory and establish branch offices in Philadelphia, New York, Boston, Baltimore, Washington and Pittsburg. The Philadelphia salesroom will be at the

northeast corner of Seventeenth and Chestnut streets.

Walla Walla, Wash.—J. G. Miller has the agency for the Elmore car.

Milwaukee, Wis.—The Waverly Mfg. Co. has been incorporated at Milwaukee by S. Lacy Crolus, J. Crolus and Ralph Spolder.

Baltimore, Md.—The Courier, which formerly was handled by the Shaab Automobile Co., has been taken on by the White Automobile Co. of Baltimore.

Pittsburg, Pa.—L. H. Randall, who formerly had the agency for the Hupmobile in the Pittsburg territory, has secured the Pittsburg agency for the Halladay.

Philadelphia, Pa.—The Cartercar is an addition to the list of cars represented in Philadelphia, the Johnson Motor Car Co., 326 North Broad street, having just taken the local agency.

St. Louis, Mo.—The Automobile Repair Co., 1103-05 Pine street, has leased the garage at 4963 Delmar boulevard and will operate it in connection with the company's other business.

Toledo, O.—The Toledo Carbureter Co. has been incorporated with a capital of \$1,000 to make and sell a patented carbureter by Jacob Lasalle and others. The plant will be established in this city.

Spokane, Wash.—The L. D. McCarthy Automobile Co., recently organized to handle the Rambler and Parry cars in this district, has opened salesrooms. The territory controlled by this company includes eastern Washington and northern Idaho.

Alliance, O.—The Verlux Co., capital \$30,000, has been formed in Cleveland by Harold H. Wood, president, and will have a plant in Alliance for the manufacture of a new system for automatic lighting of motor cars, which is the invention of its president, H. H. Wood.

Milwaukee, Wis.—The Walsh garage is the new name of the salesroom and garage at 188-192 Eighth street, recently vacated by the Stephenson Motor Car Co., which is now building motor trucks. The Hearne Motor Co., of Chicago, has located its new Wisconsin branch in the Walsh garage.

Cleveland, O.—The American Auto Sales Co. has opened its new salesrooms at 5015 Euclid avenue. The company will sell in northern Ohio the American car, Atterbury trucks and the Great Western. G. Charles Tettters is president of the company; J. Martin, secretary, and George Caniff, sales manager. J. V. Gillman, formerly a Mora salesman, will handle the Atterbury trucks.

Milwaukee, Wis.—The Hearne Motor Co., of Chicago, an Illinois corporation with \$3,000 capital, has filed articles and a statement to do business in Wisconsin. The local interest amounts to \$1,000. The Hearne company will occupy the garage and salesrooms at 188-190 Eighth street, Milwaukee, recently vacated by the Stephenson Motor Car Co., which has established a large

plant for the production of the Utility commercial car at South Milwaukee, Wis.

Atlanta, Ga.—The Atlanta branch of the Hartford Rubber Works Co. will remove the early part of October to more spacious quarters at 19 Houston street.

St. Louis, Mo.—The Grand Motor Car Co., agent for the Regal, which has been occupying temporary quarters, has moved into 1617 South Jefferson street.

Columbus, O.—Papers were filed with the secretary of state increasing the capital stock of the Cincinnati Taxicab Co., of Cincinnati, from \$20,000 to \$40,000.

Detroit, Mich.—The Standard Sales Co., 1221 Ford building, has been appointed representative of the Sta-Rite ignition plugs in the states of Michigan and Ohio, also Ontario, Canada.

Minneapolis, Minn.—Sam Beck has become identified with the Studebaker branch here, caring for the retail trade. Mr. Beck formerly was identified with the Fawkes Auto Co.

Toledo, O.—Articles of incorporation have been issued to the Dusseau Fore and Rear Drive Auto Co., of Toledo. The concern has a capital stock of \$100,000. As the name indicates, the invention of Dr. S. V. Dusseau, which consists of a scheme by which the power may be applied to all four wheels of the vehicle without in any manner interfering with the steering apparatus, will be manufactured by the company. The concern expects to put out both trucks and pleasure cars. A factory site has not yet been selected. The incorporation

Recent Incorporations

Boston, Mass.—New England Auto Specialties Co., capital stock \$50,000; incorporators, Francis W. Ruder, Edith A. Wonson and Florence B. Wonson.

Brooklyn, N. Y.—Powell Engine Corporation, capital stock \$50,000; to manufacture machinery, engines, motor cars, etc.; incorporators, L. P. Powell, R. W. Powell and C. I. McLaughlin.

Newark, N. J.—Wilson Motor Car Co., capital stock \$50,000; incorporators, Samuel F. Wilson, John Foley, Jr., and Gustave A. Lutz.

Newark, N. J.—Nicol-Winkelhofer Co., capital stock \$25,000; to manufacture and deal in motor cars and supplies; incorporators, James Douglas Nicol, August A. Winkelhofer and Louis C. Nicol.

Newark, N. J.—Hoch Rubber Co., capital stock \$100,000.

Plainfield, N. J.—Century Tire Co., capital stock \$125,000; to manufacture and sell tires for motor cars and bicycles; incorporators, Richard P. Lydor, Arthur J. Albert and John T. Dwane.

Jersey City, N. J.—National Tire Fabric Co., capital stock \$50,000.

Jersey City, N. J.—National Tire Machine Co., capital stock \$100,000.

Camden, Pa.—Eastern Motor Co., capital stock \$100,000; to construct motor vehicles, engines, etc.; incorporators, Frank R. Hantsell, William F. Eldell and John A. MacPeak.

Camden, Pa.—Merchantville Auto Co., capital stock \$25,000; to deal in motor cars; incorporators, Henry E. Bodine, Milton R. Vall and Charles F. Woodhull.

Buffalo, N. Y.—Richardson Auto-Tire Protector Co., capital stock \$100,000; to manufacture tire protectors for motor cars; incorporators, J. Richardson, O. Richardson and V. Hoefner.

Philadelphia, Pa.—Miller Automobile Co., capital stock, \$100,000.

tors are S. V. Dusseau, A. J. Marleau, E. F. Cousino and Martin Christy.

Geneva, O.—C. D. Adams and G. R. Cook have formed the firm of Adams & Cook, which has started work on a garage on East Main street.

Milwaukee, Wis.—The new home of the Wisconsin branch of the Buick Motor Co. at 158-160 Wisconsin street, will be ready for occupancy about January 1.

Eau Claire, Wis.—Thomas B. Farmer, a factory representative of the Dayton Inner Tire and Mfg. Co., of Dayton, O., has decided to locate permanently at Eau Claire.

Havre de Grace, Md.—The Havre de Grace Automobile Co. has purchased the adjoining building and will extend its garage on Union avenue. Sales rooms and a repair shop will also be installed.

Boston, Mass.—After a 4 months' vacation on the Pacific coast, Arthur P. Underhill, agent for the Knox cars in Boston, has returned to take up the reins of business again. During his absence Frank Crockett handled the agency business.

Baltimore, Md.—Leo H. Shaab is now handling the Stoddard-Dayton car exclusively in Baltimore and vicinity. He has changed the name of his firm from the Shaab Automobile Co. to the Stoddard-Dayton Automobile Co. of Baltimore.

Council Bluffs, Ia.—T. A. Mitchell, of the Neola Automobile Co., has purchased an interest in the Atlantic Automobile Co., of Council Bluffs, and become manager of the business. He will have the agency at Council Bluffs of the Ford, Reo and Premier.

Portland, Ore.—The Velie 40 has made its appearance in Portland. The John Deere Plow Co. will distribute the line in the northwest, with headquarters at Portland. J. A. Crittenden, with headquarters at 688 Washington street, is manager of the new branch.

Cleveland, O.—Tom Swan, proprietor of the Standard Top and Equipment Co., has added a paint shop occupying 20,000 square feet of space, to care for his rapidly increasing business. Thirty painters will be employed in the new quarters. The floor space of the factory has been more than doubled in the past few years.

Boston, Mass.—The Brush now is represented in Boston by a branch instead of an agency and F. Carleton Dole, formerly manager of the Royal Tourist branch, is manager of the Brush. Archie MacLachlan, manager of the Chicago branch of the Royal Tourist, came to Boston to assume charge following Mr. Dole's resignation.

Milwaukee, Wis.—E. C. Dusold, who has had the Federal tire agency in Milwaukee, has severed his connection with that concern. He will handle the state of Wisconsin for the Hartford Rubber Works Co. George H. Wright, who formerly covered Wisconsin for the Hartford, has been transferred to Illinois, covering the northern section.

THE BRIGGS MAGNETO—TWO ROADER MODELS

IN ITS improved new 1911 model A Briggs magneto, the Briggs Mfg. Co., Elkhart, Ind., has endeavored to incorporate good materials, careful workmanship and simplicity of design. The Briggs magneto is a low-tension type, having but one winding on the revolving armature. This winding is a primary one, in which is generated a low-voltage current as the lines of force between the ends of the six horseshoe magnets are cut by the rotation of the armature. In order to secure the high-voltage current a step-up coil is used. This coil contains a condenser, and may be carried on the dash or other part of the car. Owing to the fact that practically in every respect the Briggs magneto is a conventional design, it will not be necessary to go into details of general construction, other than to say that the magnets are arranged in two rows of three in each, and are made of tungsten steel. The armature shaft, as well as the distributor shaft, is carried on ball bearings. In the lubricating system is incorporated connecting tubes leading to the bearings, so that attention to these is not necessary more than once in 1,000 miles, and these provide for the thorough lubrication of every bearing in the apparatus.

The circuit-breaker cover C Fig. 1 is held in place by two thumb nuts N, so designed that they cannot be removed from the cover and lost. These nuts have long shanks, with saw-tooth corrugations, and when screwed in place on the studs on the back of the breaker-box the corrugations contact with and engage similar corrugations on loose sleeves over the studs, which are constantly pressed towards the edge of the studs by spiral springs. The thumb nuts thus engage these corrugated sleeves and the pressure of the springs behind the sleeves gives positive assurance that the circuit-breaker cover cannot become loose. When the circuit-breaker cover is removed the parts are discovered to be mounted on a flat surface, Fig. 2. As a matter of fact, the cover is the box and the flat surface, on which the circuit-breaker parts are mounted, is the lid. This arrangement will be appreciated by anyone who has ever attempted to adjust or repair a magneto, as it exposes all the parts from all sides and avoids the necessity of changing the position of the magneto when a repair or adjustment is attempted.

The breaker points P and P1 are of iridium platinum, heavy enough to stand some 10,000 miles of travel without adjustment, it is claimed. The circuit-breaker hammer H is held in position at its lower end by a hardened steel shoulder screw Z and the head at the other end is held in position, away from the circuit-breaker spring S by a duplicate spring S1 of the same high degree of strength and flexibility as the circuit-breaker spring itself. Contact between the cam C and the hammer is through a roller in the center of the

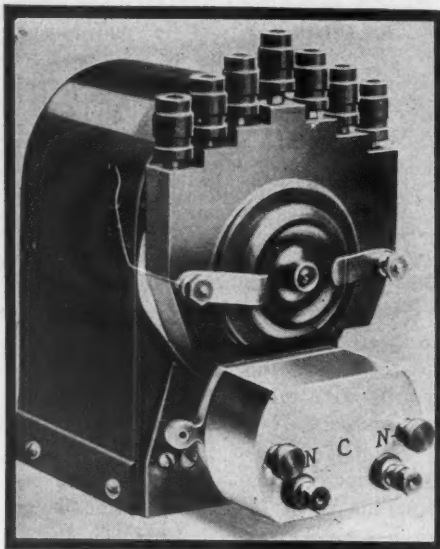


FIG. 1—THE BRIGGS MAGNETO

hammer, which is given an extra long bearing by extending the sides of the hammer. The roller is of hardened steel, as is also the cam, which fits over the armature shaft and is held in position by a shoulder and key, and further secured by a lock nut N. The cam can be removed and replaced in 30 seconds if necessary. To the right of the cam is an oil cup K with a wick W which touches the cam as it revolves, thus assuring lubrication, which is a highly desirable feature of a magneto. The distributor of the Briggs magneto is moulded in one piece of rubber. The electrical contacts with the distributors are made of split plugs, with hard rubber sleeves. The cover of the distributor is of hard rubber, held in place by two ornamental springs.

THE TWO ROADER MODELS

The Roader Car Co., Brockton, Mass., has brought out two car models of the conventional design, one being a 20-horsepower chassis with monobloc four-cylinder, 3 $\frac{3}{8}$ -inch bore and stroke; and the other model designated 30 horsepower has a

similar motor with 4 $\frac{1}{4}$ -inch bore and 3 $\frac{3}{8}$ -inch stroke. In the motor, used in both models, simplicity has been aimed at, the motor consisting of but two main castings outside of the moving parts. As customary with the majority of monobloc motors, a thermo-syphon cooling system is fitted. Lubrication is by a splash circulating system, and a Bosch magneto without batteries constitutes the current source in the single ignition system. Back of the motor comes the two-speed sliding gearset mounted at the rear axle. In the running gear are combined semi-elliptic spring suspension in front and elliptic in rear. There is a double set of brakes on the rear wheels, the external set pedal-controlled for regular use. The wheelbase measures 104 inches; tires are 34 by 3, and the usual lamp equipment is fitted.

BILL HITS MOTOR INDUSTRY

A bill known as H. R. 26459 was introduced in Washington at the last session of congress, which proposes to establish maximum dimensions of freight cars as follows: Outside width, 10 feet 6 inches; height from top of track rail to top of running board in center of roof of car, 14 feet 2 inches; also that loading on open cars shall not exceed these dimensions. Many of the cars which railroads have built for such freight as motor cars, furniture and vehicles, exceed these dimensions, and if the bill becomes a law the railroads will be required at enormous expense to cut down such cars, and observe the foregoing dimensions as maximum in future. Cars which now have an inside height of 10 feet, which is desirable, particularly for double-decked loads, would have to be reduced in height to about 9 feet 3 inches inside. The bill was referred to the committee on interstate and foreign commerce, and probably will be brought up again at the next session of congress. It is expected the motor industry will lodge a protest against the passage of the bill.

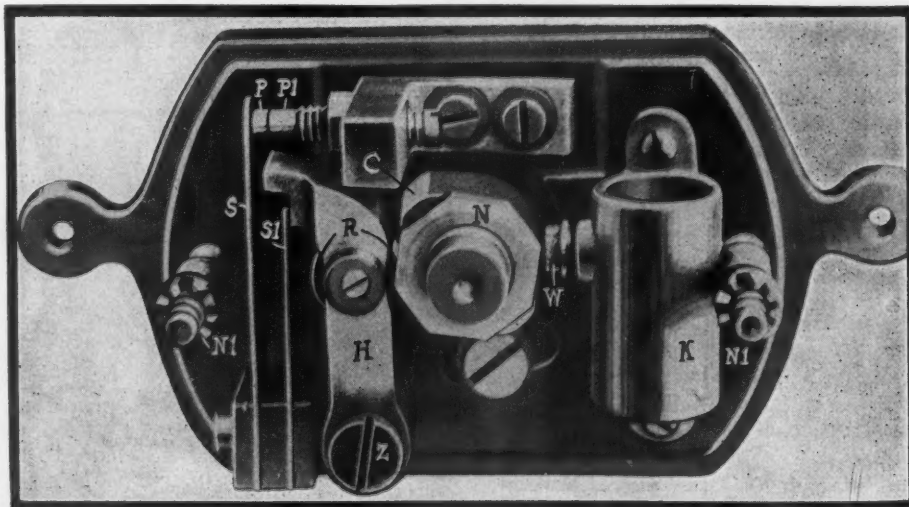


FIG. 2—CIRCUIT-BREAKER MECHANISM OF BRIGGS MAGNETO